

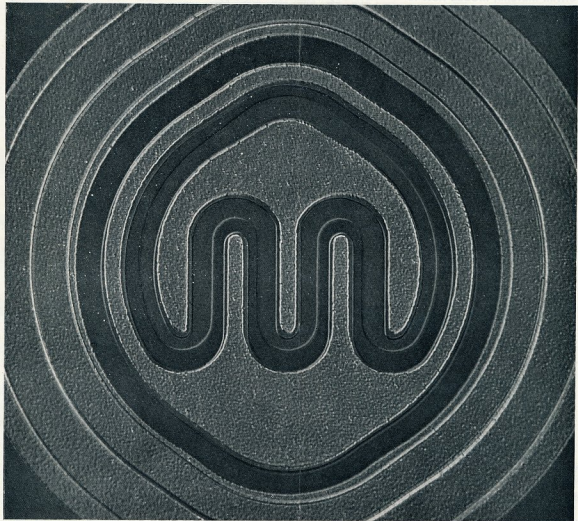
amateur radio

Vol. 37, No. 5

MAY, 1969

Registered at G.P.O., Melbourne, for
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amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA FOUNDED 1910



MAY 1969
Vol. 37, No. 5

Publishers:

VICTORIAN DIVISION W.I.A.
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Advertising Representatives:

AUSTRALIAN MEDIA/SEV
21 Smith St., Fitzroy, Vic., 3005. Tel. 41-4962.
P.O. Box 106, Fitzroy, Vic., 3005.

Advertisement material should be sent direct to the printers by the first of each month.

Hamads should be addressed to the Editor.

Printers:

"RICHMOND CHRONICLE," Phone 42-2419.
Shakespeare Street, Richmond, Vic., 3121.



All matters pertaining to "A.R." other than advertising and subscriptions, should be addressed to:

THE EDITOR,
"AMATEUR RADIO,"
P.O. BOX 36,
EAST MELBOURNE, VIC., 3002.



Members of the W.I.A. should refer all enquiries regarding delivery of "A.R." direct to their Divisional Secretary and not to "A.R." direct. Non-members of the W.I.A. should write to the Victorian Division, C/o P.O. Box 36, East Melbourne. Two months' notice is required before a change of mailing address can be effected. Readers should note that any change in the address of their transmitting station must, by P.M.G. regulation, be notified to the P.M.G. in the State of residence; in addition, "A.R." should also be notified. A convenient form is provided in the "Call Book".



Direct subscription rate is \$3.50 a year, post paid. In advance. Single copies 30c. Issued monthly on first of the month. February edition excepted.

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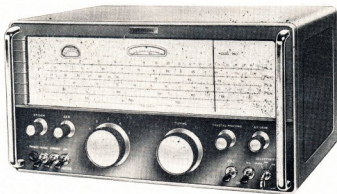
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VHF COMMUNICATIONS, the International Edition, printed in English, of the well established German Publication UKW-BERICHT, is an Amateur Radio magazine catering especially for the VHF, UHF and Microwave enthusiast.

VHF COMMUNICATIONS will follow the same path as UKW-BERICHT, by specialising in the publication of exact and extensive assembly instructions for VHF, UHF and Microwave transmitters, receivers, converters, transceivers, antennas, measuring equipment and accessories, which can be easily duplicated. The latest advances in semiconductors, printed circuits and electronic technology are described in great detail. For most articles, all the special components required for the assembly of the described equipment, such as epoxy printed circuit boards, trimmers, coil formers, as well as metal parts and complete kits will be available from the Australasian Representative.

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Mullard Special Quality Valves

for Industrial Applications

This chart enables you to identify at a glance the Mullard Special Quality Valve equivalents of C.V. Services Types, American Types and Mullard Standard Types. In addition abridged

data is provided to assist in the selection of the Special Quality Valve most suited to your specific circuit requirements. Further information is available on request.

SPECIAL QUALITY PRODUCTION			DESCRIPTION	STANDARD PRODUCTION		
Mullard Type Number	Services Type Number	American Type Number		Mullard Type Number	Services Type Number	American Type Number
E55L	CV5808	8233	High slope wideband output pentode	—	—	—
E80CC	CV5989	6085	Double triode for industrial use	—	—	—
E80CF	—	7643	Triode pentode with separate cathodes	ECF80	CV5215	6BL8
E80F	CV2729	6084	Voltage amplifying pentode	—	—	—
E80L	—	8227	Output pentode	—	—	—
E81L	—	6686	Output pentode	—	—	—
E83F	—	6689	Voltage amplifying pentode	—	—	—
E86C	—	—	U.H.F. triode	EC86	—	6CM4
E88C	—	—	U.H.F. grounded grid triode	EC88	—	6DL4
E88CC	CV2492	6922	Double triode for use in computers and cascode circuits	ECC88	CV5358	6DJ8
E88CC/01	CV2493	—	Double triode for use in computers and cascode circuits	—	—	—
E90CC	CV5214	5920	Double triode for use in computers	—	—	—
E91H	—	6687	Dual control heptode for use as a gating valve	—	—	—
E92CC	—	—	Double triode for use in computers	—	—	—
E180CC	CV8431	7062	Double triode for use in computers	—	—	—
E180F	CV3998	6688	High slope wideband amplifying R.F. pentode	—	—	—
E182CC	CV5766	7119	Double triode for use in computers	—	—	—
E186F	—	7737	High slope wideband amplifying R.F. pentode	—	—	—
E188CC	CV5354	7308	Double triode for use as cascode amplifier	—	—	—
E280F	—	7722	High slope wideband amplifying R.F. pentode	—	—	—
E288CC	—	—	Double triode	—	—	—
E810F	CV5809	7788	High slope wideband amplifying pentode	—	—	—
EC1000	—	8254	Subminiature triode for use in measurement probes	—	—	—
ECC2000	—	—	Double triode for use as V.H.F. cascode amplifier	—	—	—
M8079	CV4025	16058	Double diode with separate cathodes	EB91	CV140	—
M8080	CV4058	16100 & 4WA	R.F. power triode	EC90	CV133	6C4
M8081	CV4031	16101 & 3J6WA	V.H.F. double triode with common cathode	ECC91	CV858	6J6
M8082	CV4063	16516	Output pentode	EL91	CV136	—
M8083	CV4014	16064	R.F. pentode with separate g3	EP91	CV138	—
M8091	CV4044	16443	Half-wave rectifier designed for operation at high altitudes	—	—	—
M8096	CV4039	16062	V.H.F. power tetrode	EY84	CV2235	—
M8097	CV4059	—	Low impedance diode with medium μ triode	QV03-12	CV2129	5763
M8099	CV4070	—	Triode for use as grounded grid amplifier	EAC91	CV137	—
M8100	CV4010	15654 & 6AK5W/6096	Low noise, R.F. pentode	EC91	CV417	—
M8136	CV4003	16189/12AU7WA	Low μ double triode	EF95	CV850	6AK5
M8137	CV4004	16057	High μ double triode	ECC82	CV491	12AU7
M8161	CV4015	16065	Variable μ R.F. pentode	ECC83	CV492	12AX7
M8162	CV4024	12AT7WA	Medium μ double triode	EF92	CV131	—
M8195	CV4085	—	Low microphony, low hum A.F. voltage amplifying pentode	ECC81	CV455	12AT7
M8196	CV4011	15725 & 6AS6W	Dual control pentode	EF86	CV2901	—
M8212	CV4007	15726 & 6AL5W/5097	Double diode with separate cathodes	6AS6	CV2522	6AS6
M8248	CV5311	16J4WA	U.H.F. grounded grid triode	6AL5	CV283	6AL5
				EC98	—	16J4

†The American types shown in this chart have the same electrical characteristics as the appropriate Mullard Special Quality type and they may, in general, be regarded as interchangeable. In the case of those types marked † there are, however, certain differences in the test specifications.

Mullard

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- NOISE LIMITER
- A.C.-D.C. OPERATION
- INBUILT POWER SUPPLY

SPECIFICATIONS:

RECEIVER
Frequency Range: 144-148 Mc AM
Sensitivity: 1 microvolt for 10dB S/N at 145.5 Mc (0.05 W Audio Output)
Image Ratio: 50 dB at 145.5 Mc
IF Frequency: 1st IF 44-45 Mc
 2nd IF 10.7 Mc
 3rd IF 455 Kc
Noise Limiting: Automatic
Squelch: 1 microV-300 microV
Selectivity: 20 dB down at 10Kc
Audio Output: 3W 8 ohms
Input Impedance: 50 ohms (Unbalanced)
TRANSMITTER
Frequency Range: 144-148 Mc AM
Power Input to Final: 22 to 26 Watts
RF Output Power: 10W 144-146 Mc
 AC 240V Operation
 9W 144-146 Mc
 DC 12.8V Operation
 FT-243
 8-8.222 Mc

VFO Frequency: 8-8.222 Mc
Microphone Input: High Impedance w/Push to Talk
Frequency Response: —3 dB at 300 and 3,000 c/s
Output Impedance: 50-100 ohms w/Coaxial Connector
POWER SUPPLY
AC Operation: 117/230V 60/50 c/s
 Receive Power Drain 106 VA
 Transmit Power Drain 146 VA
DC Operation: DC 12.8V (12/14V)
 Receive Power Drain 90 VA
 Transmit Power Drain 120 VA
Tubes and Transistors used: 16 Tubes
 1 Nuvistor, 8 Diodes, 4 Power Transistors
Dimensions: H: 6 5/8"; W: 11 1/8"; D: 12 3/4"
Weight: 22.2 lb
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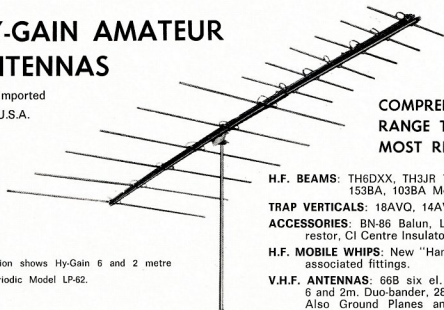


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FEDERAL COMMENT

By JOHN B. BATTRICK, VK3OR, Immediate Past Federal President, W.I.A.

I wrote this "comment" after returning from the 33rd Annual Federal Convention held last month in Canberra. This will be my last comment as I have asked Federal Council to accept my retirement from Executive due to pressure of business and for personal reasons. I announced this fact at the commencement of proceedings at the Convention, which left Federal Council the additional problem of a replacement for the office of Federal President.

However, it did allow for discussion among Federal Councillors and towards the end of the Convention, Federal Council, by unanimous decision, appointed David Wardlaw (VK3ADW) to fill the vacant position on Executive, Michael Owen (VK3KI) to the position of Federal President, and David Rankin (VK3QV) to the position of Federal Vice-President. I was appointed for a further term as the W.I.A. Director I.A.R.U. Region III. Association—for which I am grateful as it will allow me to continue to serve W.I.A. and Amateur Radio in an important area of activity, but without the stress attaching to the office of W.I.A. Federal President.

Personally I am very pleased with the decisions of Federal Council to appoint two such young and experienced men to the positions of President and Vice-President. This is, in any organisation, a rare combination—youth and experience. David VK3QV is well known as a long-standing member of Executive. His activities on v.h.f. bands and 10 metres, his competent management of W.I.A. Federal Activities (contests, etc.), his valuable assistance given to set up the Region III. inaugural congress, his contact with overseas Amateur Societies on a personal basis, his attendance at many Federal Conventions—all bring a valuable background of experience to his office. He will continue his work as Federal Activities officer in his new position.

The new Federal President, Michael VK3KI, is also a well known worker for Amateur Radio and the W.I.A. Over the past six or seven years he has been a tireless and determined officer in both Divisional and Federal matters. I say determined only because there are

times when the pressing of matters clearly aimed at improving the W.I.A. organisation and our hobby has needed a forthright approach to the problems. This has been supplied and such things as the new Handbook, with its liberal operating and licensing provisions, the detailed work on the new Federal Constitution, the development and planning of the W.I.C.E.N. network in VK3, the detailed drafting of the interim constitution for the Region III. I.A.R.U. Association, the active attendance at many Federal Conventions, the recent achievements with regard to v.h.f. repeater/translators, show the results of his energetic and forthright approach.



JOHN B. BATTRICK, VK3OR,
Immediate Past Federal President, W.I.A.

A very high degree of personal rapport has been established between the officers of P.M.G. Central Office and our new Federal President over recent years. He still finds time to operate his r.t.t.y. equipment and to be active on v.h.f. f.m. nets (he was as a matter of interest, one of the first to operate equipment on 145.854 Mc. f.m., from which has grown the present net frequency system).

I put these points before you to indicate that Federal Council in its unanimous decision to appoint Michael and David to these high positions in our society recognises, no doubt, the value of youth when allied to such a wide and deep experience. Such people are rare and their expertise a "must" in

any organisation. They will be ably supported by Peter Williams (VK3IZ) as Federal Secretary—also a long standing co-worker with Michael and David, and a tireless administrator (or we hope he is tireless, hi). This point I may pick up—we all accept hard work, we all give our time as we can to help the W.I.A.—but stress none of us needs in this busy world of today.

The recent "Federal" Convention in Canberra was one of the most significant for many years. The fact that all the delegates and members of Executive present were housed together in the one centre which also contained the conference room allowed for many free exchanges of views both at the conference table and in the periods between formal sessions. As a result, many differences of opinion were explored, compromise reached, and stress reduced.

These areas in which compromise can be reached, that is, where some solution acceptable to all is possible from an initial position of difference, is one of the easiest areas for Executive to carry out. Easiest because the instructions stem from unanimity. However, many areas in which F.E. is required to execute some direction from Federal Council are less easy because instructions stem from majority decisions. Executive must, by virtue of our society procedures and rules, in these areas, proceed in a manner consistent with the views of the majority, however keeping also in mind the views of a minority. A deeper realisation of the difficulties inherent in this latter activity have resulted from the first convention in our "Federal Capital".

I hope you will all give your new Executive your wholehearted support during its coming year—I believe you have a vigorous and talented Executive with youthful and experienced leaders. As I said before, a rare combination. They have much to do for you. (61 motions and motions arising were dealt with at the Canberra Convention between midday Friday and midnight Sunday). I commend them to you and thank them for carrying on from where I unfortunately had to leave off.

NEW IDEAS ON AMATEUR TELEVISION

PART TWO

GRAHAME WILSON,* VK2ZGW/IT

As you have probably realised by now, Amateur Television offers a unique and challenging opportunity for the Amateur to try out his ingenuity, but there is a definite method of tackling Amateur Television so as to avoid as many problems as possible.

Firstly, if possible, you should join an ATV group or contact people interested in ATV so as to gain as much experience as possible. Many Amateurs have had experience in television and can give you a great deal of assistance.

Secondly, Amateur Television is quite different from Amateur Radio and so is the test equipment used. It is most essential that you have access to certain pieces of test equipment or you will be working in the dark—remember, television works on pulses, not on sine waves. Once again, great effort in pooling test equipment is about the best method. The most important piece of test equipment is the c.r.o., followed closely by the multimeter and signal generator.

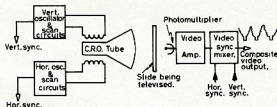


FIG. 1. THE FLYING SPOT SCANNER (Simplified block diagram)

Thirdly, you should plan your projects well ahead of construction, show your circuit diagrams to other ATVers for constructive criticism. Basic individual circuits should be built as prototypes and their performances noted before you build any major projects as this will avoid those nagging faults that always seem to follow a bad design. I will be giving you further hints on design later in the series.

The circuits used in television, or for that matter, any electronic circuitry, are built up of basic circuit functions and if you understand these functions you will not be restricted to one design but may modify it to your own needs. It is, therefore, necessary to get your basic television circuit theory off pat.

Fourthly, do not rush in to ATV and expect results immediately, start slowly and build up your equipment, such that each section is of known reliability and when connected to the "system" you know that it will work. This is a much better approach in the long run.

Throughout this series of articles my approach to the subject will be of more to giving information and ideas rather than describing projects that follow a rather rigid line of circuitry and construction. There are several reasons for this. Firstly, it would mean a great

deal of developmental work on my part to produce designs that everyone can construct without difficulty, and secondly the requirements of different Amateurs will vary greatly according to their needs and the parts they have available.

If you would like to follow a series of articles on construction of ATV equipment try and obtain copies of "A.R." March to November 1958. This series of articles was magnificently developed by E. Cornelius, VK8EC/T, and the equipment described is quite suitable for use today as it was designed around C.C.I.R. standards that the television services comply with. Considering the time the series was written it would probably be safe to say that the articles would class as one of the "classics" of "Amateur Radio," the work put into this series must have been phenomenal. All I can say is if you can get hold of the series, read it!

As this article is the second in the series I will not have time to describe

transparencies) can be televised. The still camera consists of what is known as a flying spot scanner, this is a simple device in which a c.r.o. tube is scanned so as to produce a raster. The light from this raster is then focused through a film negative onto a photomultiplier which picks up the signal and amplifies it. Synchronising pulses from the oscillators in the scanning coils are added to the output of the photomultiplier so as the video is synchronised (known as composite video).

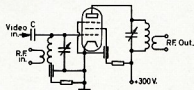


FIG. 2a. GRID MODULATION.

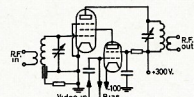


FIG. 2b. SCREEN MODULATION.

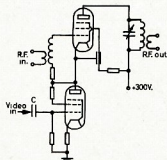


FIG. 2c. SERIES (Cascode) MODULATION

*C - Very large.

Note—These circuits are illustrative only.



I will describe the operation of the live camera in my next article.

The next and last section of the ATV station is the transmitter and modulator. In many respects a video transmitter is the same as an audio one, the main difference being the bandwidth of the transmitter. In order to obtain bandwidths in the order of about 5 Mc., a different approach to modulating has to be taken, the use of reactive transformers is out and one has to adopt a completely different method. This is quite easily done by coupling

the "set up" in the shack fully, but I will endeavour to give you a brief idea of what the actual equipment in the shack consists of.

The ATV station consists of three major sections:

- (1) The camera.
- (2) The modulator and transmitter.
- (3) The converter and receiver.

Taking the last first, the receiving section of an ATV station consists of a receiving device (antenna), a 432 Mc. converter and a television set. The antenna will usually be a Yagi with about 12 to 16 db. gain, or a phased array of similar gain. The converter will vary, depending on gain needed, location and the like. For just reasonable distances, almost any reasonably low-noised converter will do, it can also have a free-running oscillator as stability for television reception is not of paramount importance. The output of the converter can feed into an unused t.v. channel of a standard television set.

The camera can be of two categories:

- (1) Still camera.
- (2) Live camera.

The difference between the two is quite self-explanatory. In the still camera photographs (negatives and

1 Local oscillator of t.v. set should not produce harmonics on 432 Mc. if you select the channel with this in mind.

*31 Ada Street, Katoomba, N.S.W., 2780.

(Continued on Page 15)

A FIELD-DAY TRANSMITTER

T. MITCHELL,* VK3EZ (Ex VK5TH)

• This article is intended to encourage building for and participating in the National Field Day Contest. The transmitter has been proved in service as reliable communications with Eastern U.S.A., Canada and New Zealand have been successful.

In designing this 15-watt transmitter, my original intention was to build a transceiver. The space now occupied by the power supply and sidetone amplifier was to be used for a two-band transistorised receiver. Terminal TSB-3 was the receiver 12 volt supply. Having bought the EC10 receiver, the inducement to continue the in-built receiver ceased.

Some points of interest are:

means less inter-circuit wiring. No microphone press-to-talk switch is necessary.

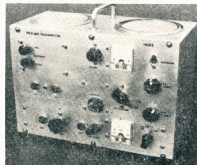
3. Keying

Screen grid keying is quite effective in this transmitter. In conjunction with crystal control and a regulated h.t. oscillator supply, and noting the very small keyed screen grid current (0.7 mA.), the transmitter output is clean, chirpless and free of key clicks. The disadvantage, of course, is that the

THIS description of a self-contained 40 and 80 metre transmitter is intended to encourage some of our younger Amateurs to take an interest in portable operations and, in particular, to participate in Field Day Contests. As VK5TH/P and VK3EZ/P, I have enjoyed several Field Day Contests, starting with unsophisticated rigs, but year by year improving my gear.

In 1968 I used the transmitter described here in conjunction with a Super Pro receiver using dry batteries, for high tension. For the 1969 Contest I was in the field using this transmitter in conjunction with an Eddystone EC10 (transistorised) communications receiver. Voltage for the transmitter was obtained from the automobile cigarette lighter via a special plug which is available for about 60 cents.

Whatever the rig, crude or sophisticated, the John Moyle Memorial National Field Day Contest is, for me, the most important day in the Amateur Calendar. There is no more enjoyable experience than operating under field conditions, using equipment built, modified or improvised for the occasion.



1. Portability and Cost

The cabinet, sidetone speaker, C14, C15, TR/1 and several other components were purchased quite cheaply from city disposal houses.

2. Single Switch Operation

See circuit diagram and note the separate meters for monitoring power amplifier grid and plate current. The space taken by a small meter is no larger than necessary to accommodate a switch, and having separate meters

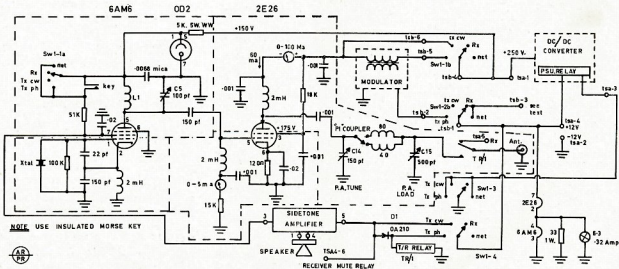


Morse key is at +150 volts potential. However, insulated keys are available at disposals houses at about 50 cents.

4. C.W. Monitor (Sidetone)

As a keen c.w. operator, I insist on a keying monitor. I do not like using a transistorised receiver for monitoring signals. It is far better to switch off the receiver whilst transmitting. Most

* 91 Roslyn Street, Burwood, Vic., 3125.



circuits previously published have used r.f. power as a voltage source for the monitor. However, I consider that with the low r.f. power available, adjustment of coupling could be tricky.

My circuit uses the oscillator keyed screen supply as a voltage source for the multivibrator transistors in the sidetone unit. Although this does not prove that the transmitter is actually radiating, it provides a faithful reproduction of the operator's keying characteristics. The 12-volt supply is used for the sidetone output circuit. Diode D1 prevents sidetone operation when switched to "transmit phone".

5. Stability

With crystal control, regulated high tension supply for the oscillator, and proper screening, stability is as good as many fixed station transmitters. The broken lines on the circuit diagram in conjunction with the photographs show clearly the screening. Note that the oscillator tube is mounted above the chassis to provide further isolation between oscillator plate and grid circuits.

6. Minimum Operating Controls

Careful consideration was given to this aspect and the circuitry provides single switch operation for four functions. The oscillator plate circuit tuning capacitor C5 tunes 40 metres at near minimum and 80 metres at near maximum. 80 or 40 metre crystals can be used for 40 metre operation. The EF91 (6AM6) is a well screened tube and operation on the fundamental crystal frequency is satisfactory.

7. Phone Operation

The modulator is based on an article entitled "Modulator Design with OC26 Transistors" in Mullard "Outlook" for May-June 1960, modified in the March-April 1962 edition.

8. Coil Data

Oscillator plate coil L1—

25 turns of 30 gauge enamelled wire on a 1" diameter former, turns removed to tune 80 and 40 metres at near extremities of C5.

80 metre final tank coil—

21 turns of 24 gauge wire on a 1½" diameter former, double spaced.

40 metre final tank coil—

13 turns of 24 gauge wire on the same 1½" diameter former, double spaced.

GETTING LAST BIT OF POWER FROM A.W.A. MR3 CARPHONE

If you measure the voltage drop across the metering resistor in the p.a. anode of your MR3 (and I suppose other units also) you will find a drop of about 8 volts across this 100 ohm resistor which means that about ½ watt is being dissipated as heat.

So to make this ½ watt of power work, short out this resistor by applying a short to your metering plug and leave it plugged permanently into the p.a. anode metering socket.

—Max Hepper, VK3ZQY.

1969 U.S.S.R. DX CONTEST

RULES FOR C.W. SECTION

Date: 09 GMT, May 3, to 21 GMT, May 4. Object: To work as many stations as possible, both in the U.S.S.R. and in other countries.

Exchange: RST plus three-figure serial number starting from 001.

Scoring: Each contact is worth 3 points. Contacts with the same country count 0 points, but can be counted as a multiplier. The multiplier will be equal to the total number of countries worked, regardless of the band. Final score equals sum of QSO points from all bands multiplied by number of countries worked.

Scoring will be for a maximum of 12 hours. Submit the complete log, but mark the 12-hour period you wish to be entered for and score only this period. Mail the log within 15 days to C.R.C., P.O. Box 88, Moscow D-362, U.S.S.R.

YL INTERNATIONAL S.S.B'ERS 1969 QSO PARTY

Beginning 0900 GMT, 24th May, through 2400 GMT, 25th May, 1969, both phone and c.w. S.S.B'ers have many c.w. only members so all bands and modes will be used and a new c.w. only plaque will be awarded for world high c.w. score. The QSO Party is in three categories, non members are welcome as all Radio Amateur awards are supported.

Categories: 1—DX/WK teams, 2—YL/OM teams, 3—single operator.

Exchange: RST, s.s.b. number, state, country, or VE/VO province, partner's call. If no partner, leave blank. If non-member, send "no number". Sending name is optional.

Suggested Frequencies: Plus or minus 5, 10, 15 Kc. as QRX dictates. Phone—3675, 7773, 14332, 21373. DX may transmit on 5773, 7000, 1432. C.W.—3655, 7065, 14070, 21070, 28070.

DX/WK Teams: Each team consists of a DX and a WK station. The team score is the sum of both partners' scores and determined when both logs are received.

YL/OM teams: Each team consists of one YL member and one OM member who are related, i.e. husband and wife, father-daughter, mother-son, brother-sister. Operation must be from same QTH using same rig and his or her own call.

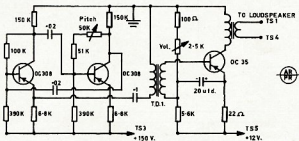
Single operator category: Non members will be entered in this category.

Logs: Must show GMT date, GMT time, RST sent and received; his state, VE/VO province, or country; s.s.b'ers number, partner's call-bands and modes of operation. Logs must show six continuous hours of rest in each 24-hour operation and each team member must show at least six hours of operation during the party.

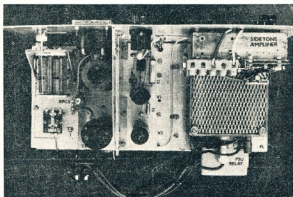
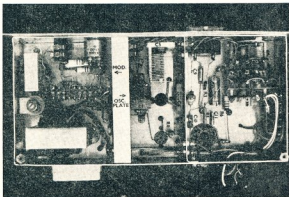
To qualify for the single operator world-high combined score trophy, logs must show at least six hours of operation in each mode, c.w. and s.s.b.

Conditions: The same stations may be contacted for additional contact points on different bands and modes, but NOT for additional multipliers. All operations will be with one transmitter and receiver or one transceiver and receiver only. Any difficulty not covered by these QSO Party rules will be decided by the YL Int'l SSB'ers Executive Council for maximum pleasure to all participants.

Logs go to Woody Bennett, W0GNX, 8639 E. 31st Street, Kansas City, Missouri, 64129, U.S.A.



SIDETONE OSCILLATOR AND AMPLIFIER



PROJECT—SOLID STATE TRANSCEIVER

PART SEVEN

H. L. HEPBURN,* VK3AFQ, and K. C. NISBET,† VK3AKK

THIS month's article will deal with the cabinet for the complete transceiver and give an abridged lining up method for the receiver. It was originally intended to describe the transmitter p.a. in this article but—to judge from correspondence—the majority of participants preferred to have cabinet and receiver line-up information first. The p.a. article will thus appear next month.

THE CABINET

An exploded view of the cabinet is given in Fig. 21, from which it can be seen that it consists basically of a "U" shaped chassis tray to which back and front panels are attached. Unperforated top and bottom covers, slightly wider than the depth of the cabinet, follow the rounded corners of the panels and attach to the vertical sides of the central tray.

Fig. 18 gives the front panel layout, the central item being the Eddystone Type 898 dial, with all other controls

steel. The top and bottom covers are of 20 gauge steel. All parts are fully drilled, cadmium plated, passivated and the exterior parts sprayed.

Those who wish to make a smaller cabinet to suit their own end requirements will undoubtedly do so. It is to be hoped they may get a few ideas from these notes.

As an example of the degree of "compression" that can be achieved, it is worth mentioning that one of the authors (VK3AKK), using standard project boards and a smaller (but less satisfactory) dial, has made a three-band transceiver that fits into the glove box of his Kombi station wagon.

RECEIVER ALIGNMENT

This part of the article will make frequent reference to coils, trimmers, etc., and the reader is advised to have before him the six previous articles in this series, i.e. the November and December 1968, and the January, February, March and April issues of "A.R."

The reference numbers (of coils especially) are those used in the previous articles.

It is assumed that a good signal generator is available to do the lining up of the receiver. By "good" is meant a s.g. with a reliable attenuator. It is not recommended that use be made of the cheaper types whose leakage alone may be in excess of tens of microvolts.

With one exception, Figs. 14 and 15 in the March 1969 issue of "A.R." gave the d.c. and signal interconnections for the modules making up the receiver part of the project. The exception was the filter pre-amplifier. When on receive this module takes its h.t. feed from the a.g.c. line through a diode, and should be so connected in carrying out the commissioning procedure.

Rather than put all modules into their final case or cabinet, it is strongly recommended that they first be mounted on to a metal plate (aluminium for preference) about 18" and 12", using the layout given in Fig. 19. The voltage regulator board, the 0.1 mA. "S" meter and the b.f.o./prod. det. box can be wired "outboard". This procedure is recommended in order to make simple the removal and checking of any individual board should this be necessary.

It is also suggested that the various switches are not wired into circuit and that connections to the desired sections of the circuit be made using temporary leads. In this way it is possible to commission one band at a time and be sure it is operational before going through the time consuming process of wiring up, say, the bandswitch, and then perhaps having to disconnect when a problem turns up somewhere.

These general remarks apply not only to the bandswitch but to functional

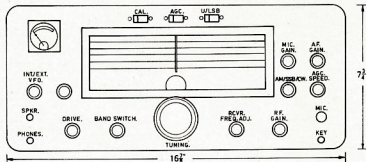


FIG. 18. FRONT PANEL LAYOUT.

and inlet sockets being symmetrically grouped round it.

Not shown is the rear panel which carries signal and power connections for external crystal or v.f.o. control, the antenna input socket, the power input socket and provision for future vox controls.

Figs. 19 and 20 give the layout of the various printed circuit boards and die cast boxes on respectively the top and under sides of the main chassis tray.

No attempt has been made to miniaturise the case, it being felt more important that there should be plenty of working space for both the initial interwiring and subsequent adjustment procedures. A bonus to this line of reasoning is that plenty of room is available for the future addition of extra bands, converters, calibrators, vox, two-tone test oscillators and other similar accessories.

The cabinet made for the project (and mentioned later under "Availability") has a chassis tray made of 16 gauge steel, a back panel of the same gauge and a front panel of 14 gauge

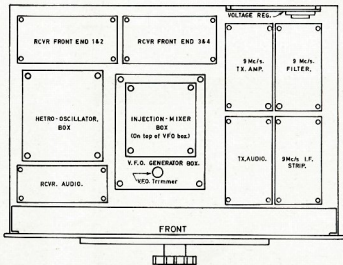


FIG. 19. ABOVE CHASSIS VIEW.

* 4 Elizabeth Street, East Brighton, Vic. 3187.
† 25 Thames Avenue, Springvale, Vic. 3171.

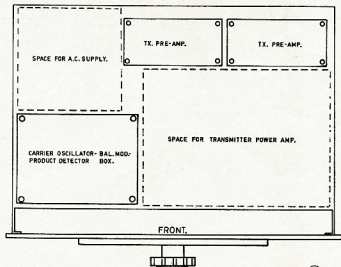


FIG. 20. UNDER CHASSIS VIEW.

switching such as a.g.c. speed, upper and lower sideband, a.m./c.w./s.s.b., etc.

To further simplify commissioning, it is recommended that no relays be used but that direct connections be made to the points on the v.r. board indicated by Fig. 14.

The general connection procedure is as follows.

(1) Receiver audio module. Take h.t. from the unregulated supply. Take input from the slider of a 50K potentiometer wired across the spare terminals of the uA719c i.c. (Fig. 14). The potentiometer can be mounted on a temporary bracket near the front of the base board.

(2) Receiver i.f. strip. Take h.t. from the unswitched regulated line on the v.r. board. Do not wire in the 320 uF, and 1,000 uF, a.g.c. timing capacitors at this time. Make the necessary connections between the a.m. (not limited) output pin, the 50K audio level control and the spare uA719c pins (Fig. 14 again). Do not wire in the a.m.-limited circuit.

(3) Connect the a.g.c. outlet on the i.f. board to the a.g.c. inlet on the v.r. board. Wire the "S" meter to the v.r. board. Set the 1.5K "S" meter zero and the 22K "S" meter f.s.d. trimpots on the v.r. board to half rotation. Set the 22K a.g.c. threshold trimpot on the i.f. board to maximum resistance to render the a.g.c. action inoperative (see Jan. '69 "A.R.").

(4) Temporarily connect a 100 ohm resistor across the i.f. board input terminals to act as a "load".

(5) From a signal generator apply 100 microvolts or so of modulated 9 Mc. to the input of the strip. Adjust the cores of T1 and T2 for maximum audio output, backing off the generator as resonance is reached. When on resonance, connect a 0-15 voltmeter between the a.g.c. line and earth. Adjust the 1.5K trimpot on the v.r. board to zero the "S" meter. Set the signal generator to 20 microvolts output and

then adjust the 22K a.g.c. trimpot on the i.f. board until the voltage indicated on the 0-15 voltmeter just starts to drop. At this point the "S" meter should just start to rise.

The back end of the receiver is now nearly on frequency. Exact frequency will be established in the next step.

(6) Remove the 100 ohm resistor from the input to the i.f. board and wire in first, the filter board and then the filter preamplifier board. Use thin co-axial cable for signal connections, earthing each end of the shield to the earth pins provided on the various boards. It may be necessary to take the earth mat on the i.f. strip directly to the ground plate by means of lugs soldered to the earth mat at each corner and use the mounting bolts to complete the earth return. The h.t. feed for the filter board comes from the main regulated supply. The h.t. feed for the preamplifier comes from the a.g.c. line.

Apply a 100 microvolt modulated signal to the preamp. input. Swing the

generator slowly around 9 Mc. until a signal is heard going through the pass band of the filter. Centre the signal in the pass band and adjust the cores of T3 and L23 (Fig. 10) to resonance. Repeat the cores of T1 and T2 on the i.f. board to resonance. Note that these adjustments, and those that follow, can be done using the "S" meter as a tuning indicator.

The back end of the receiver is now operative in the "a.m.-not limited" mode.

(7) The VFO.

To adjust the frequency of the v.f.o. to the correct range, the following procedure is recommended.

Set the main tuning capacitor to full capacity and the 3/30 pF. trimmer to half capacity. Apply power to the v.f.o. from the regulated line. Listen for the v.f.o. note between 8 and 10 Mc. on a general coverage receiver. Note this frequency. Open the tuning condenser to minimum capacity and again search for and note the frequency of the v.f.o. signal.

As the coil supplied in the kits has excess turns on it, the v.f.o. range in the unmodified condition will probably be less than 0.5 Mc. and will have a lower range frequency below 10 Mc.

Temporarily short the top turn of the v.f.o. air-wound coil and repeat the "range" measurement. The lower v.f.o. frequency will now have risen from, say, 8.5 Mc., or thereabouts, to perhaps 9.0 Mc. or thereabouts. Again short a turn and repeat the "range" measurements. Repeat this procedure until the lower v.f.o. frequency is close to 10 Mc. and can be brought exactly on to 10 Mc. by adjustment of the 3/30 pF. trimmer. Remove the shorted turns from the coil and check again that the lower v.f.o. frequency can be set to 10 Mc.

(8) The 46 Mc. oscillator is now checked. Set the slugs of L15 and L13 (Fig. 6) to half way. Set the slug of L14 almost out. Screw L14 through its complete range and note where the drain current (as measured with a volt meter across the 1.0K decoupler, or with a 0-20 mA. meter in series with it) drops by about 0.5 mA. (indicating oscillation) and then rises again (in-

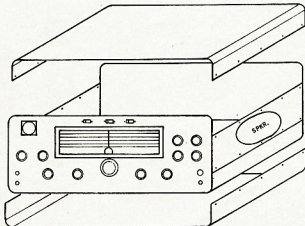


FIG. 21. EXPLODED VIEW OF CABINET.

dicating non oscillation). Set the L14 slug half way between the "oscillating" points. Check that oscillation starts reliably by switching the h.t. on and off several times. It may be necessary to repeat this procedure several times, making small adjustments to the core of L15 each time, to ensure reliable starting and oscillation.

(9) **The heterodyne oscillators.** For each band, one at a time, set the slug of L19 to mid way and the slug of L20 full out. Connect each oscillator to the regulated voltage line through a 0-10 mA. meter. Swing the slug of L20 through its full range, noting the points at which the drain current falls by about 0.5 mA. (indicating oscillation) and then rises again (indicating cessation of oscillation). Set the slug between these two points and check for reliable starting by switching h.t. on and off a few times.

(10) **Receiver front ends.** Check each front end strip separately, one band at a time.

Connect up the v.f.o./generator, the injection mixer and the appropriate heterodyne oscillator as shown in Figs. 14 and 15. The output of the injection mixer is coupled to the oscillator input of the front end board in use. Check that the 1,000 pF. capacitor across the output of the front end board is in place. (Refer to Dec. 1968 "A.R.") Connect the front end board output to the filter preamplifier, again using co-ax. H.t. feed for the front end board is taken from the a.g.c. line.

From the signal generator (set at mid band frequency) apply a 100 microvolt signal to the antenna input link (L1, Fig. 5).

Swing the v.f.o. tuning condenser until the input signal is identified. Peak the cores of L2 to L8 on the front end board, L16, L17 and L22 on the injection mixer board, and L10 and L12 in the v.f.o. for maximum output as indicated on the "S" meter, backing off the signal generator output as lining up proceeds.

The cores of the two 46 Mc. traps, L11 (v.f.o.) and L18 (inj. mix.) are set at the half way mark.

The complete receiver is now operational in the a.m. mode.

(11) **The carrier oscillator and product detector.** The carrier oscillator, or b.f.o., can be checked by applying voltage from the regulated line and listening around 9 Mc. on a general coverage receiver for output. Both "normal" and "reverse" carriers should be checked.

Feed output from the b.f.o. and the i.f. strip to the product detector. Apply a few microvolts of unmodulated signal frequency to the front end board. It should now be possible to hear an audio output. Replace the signal generator with an antenna, tune in a sideband station, and adjust the 3/30 pF. trimmer across the "normal" sideband carrier crystal to give acceptable speech quality.

This completes the primary commissioning procedure.

The various modules may now be placed in their final positions in whatever case or cabinet is to be used in the knowledge that they are all working correctly. Wire in the various external function switches and controls.

The final line-up consists simply of tweaking the various slugs to give maximum output. The cores of L8, L5 and L7 on the front end boards are adjusted to give maximum output at about 25% of the way above the lower band edge, while L2, L4 and L8 are adjusted at say 25% below the upper frequency end of the band in use.

AVAILABILITY

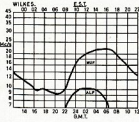
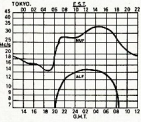
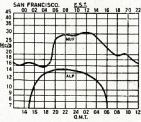
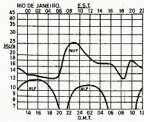
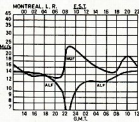
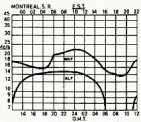
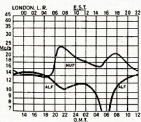
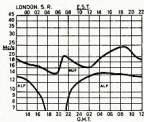
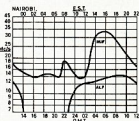
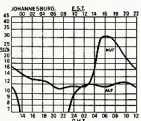
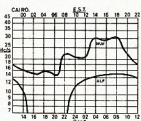
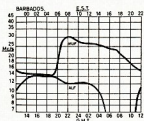
(a) Fully drilled, cadmium plated and passivated cabinets with the exterior sprayed black are \$28.50 each, including packing. Supplies will be available from about the third week in May. Transport will be extra, so please include enough to cover 20 lbs. weight.

(b) Dials. The recommended Eddy-stone No. 898 dials are obtainable direct from Wm. Willis, of 430 Elizabeth St., Melbourne, 3000, at \$22.22 each. They can be obtained through the project at the same price if required.

(c) Accessories kit. This contains all the necessary plugs, sockets, knobs, switches, etc., except the bandswitch. The standard kit—including "S" meter and two 12 volt DPCO gold plated relays costs \$32.50 exclusive of postage. Relays and "S" meter are obtainable separately if required.

PREDICTION CHARTS FOR MAY 1969

(Prediction Charts by courtesy of Ionospheric Prediction Service)



THE DJ4VM MULTIBAND QUAD*

Aerial System with Two Driven Elements and Centre Fed Single Quad Loop per Element

by PROF. DR. PHIL. WERNER BOLDT,† DJ4VM

(Abstract Translation by H. F. RUCKERT,‡ VK2AOU, ex-DLIEZ)

THE advantages of a monoband cubical quad aerial, to give good DX results in spite of low installation height (<1λ) and its high front to back (F/B) ratio, are well known. Not solved is the problem of achieving these features if a conventional multiband quad with two or three wire loops per element is employed. At 28 Mc. only 25% of the 14 Mc. element area is being used. Field interaction occurs and the phase symmetry upper and lower quad half is disturbed. Recent publications* show that certain solutions to this problem are being tried.

The author developed a new quad, working at first at 145 Mc., and since autumn 1967 on the DX bands (German patent applied).

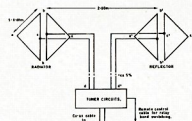


FIG. 1 Schematic diagram of DJ4VM multiband quad. Both elements driven.

DESIGN FEATURES

Each quad element consists of two triangles and the hypotenuses are part of the feed line to drive the upper and lower element half exactly symmetrically (Fig. 1). The four sides of the quad (short sides of triangle) are 5 m. (16 ft. 3 1/2 in.) to 6.4 m. (21 ft.) long for 14, 21 and 28 Mc. operation. The spacing between the radiator and the reflector may be 2.6 m. (8 ft. 6 in.). The reflector quad, including its tuned feeder, should have 5% more wire length or the tuning coil may be increased instead.

The feeder lines are made long enough so that the aerial tuners (one for each band, and such a set of three for each element, e.g. six tuners for a triband two element quad) can be easily reached from below the quad for tuning of the aerial at the final and high position. The feeder should not be a multiple of a quarter wave on any band, to avoid tuner adjustment difficulties. A single co-axial cable goes from the transmitter to the tuning box containing the switching relays and the tuned circuits of the aerial tuners.



FIG. 2 Current distribution of an unswamped fed 20m quad. Element oriented side-on, back 50m. A fairly typical radiation would occur at line.

Aerial relays may be used to switch the co-axial feeder to the desired tuner parallel tuned circuit, and to connect the parallel wire feeders of the two quad elements to the appropriate tuner pair. The relays may be remotely operated from the shack.

ADVANTAGES

This quad has less wind resistance than a conventional 2 x 3 wire loop quad. The wire length is not critical, and the four outer quad element sides may have 2.4 times the length of the shortest wavelength transmitted. Loops of 4 x 5 m. (mini quad) or over 4 x 6.5 m. (extended quad) bring reduced efficiency and additional radiation loops respectively. Separate tuning of each element at the three main operating frequencies assures low SWR and compromise free conditions.

An extremely high front to back ratio is maintained in spite of the same spacing for all three frequencies (F/B ratio is only 15 db. in the case of some other multiband quads). There is only a small frequency difference (30 Kc. at 21.3 Mc.) between tuning for the best forward gain and maximum F/B ratio. The usually necessary difficult-to-perform tuning near the top of the mast is avoided. Retuning of the elements at full operating height, after the initial tuning has been carried out near the ground, is no problem.

The accurate symmetrical tuning and feeding of the element halves guarantees clean phase conditions, causing better directivity (narrow beam of radiation), therefore more gain and extremely small backward radiation, resulting in less QRM, low vertical angle radiation (important for DX). (See Figs. 2 and 3). These advantages may be worth the effort to construct the more complex feeder-tuning system, if the operator wants no compromise but perfection.

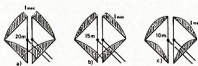


FIG. 3 Symmetrical current in upper and lower quad element system. (a) Full size on 20m. (b) Extended, used on 15m. (c) 18m-square quad on 10m (4db extra gain).

CONSTRUCTION DETAILS

The boom carries at each end a cross made of fibre glass or weather-treated bamboo rods. The vertical member of the cross holds the tuned feeder part of the quad element (hypotenuses of triangle) in form of a 600 ohm (or so) feed line. The two dipole wires are strung between the cross ends to form the quad loop. (Fig. 5.)

The aerial tuners have approximately the following dimensions (capacitors being 50 pF. maximum):

COIL DATA

20 mx band: 10 turns, 4 cm. (1.57 inch) diameter.
15 mx band: 8 turns, 3.5 cm. (1.38 inch) diameter.
10 mx band: 8 turns, 3 cm. (1.18 inch) diameter.

The co-axial (50 ohm) feeder line may be link coupled (via 1 to 2 turns) or connected directly 1 to 2 turns away from the earthed centre of the tuner

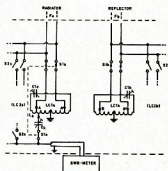


FIG. 4 Tuning and matching circuit for two element multiband quad. One of the required six capacitors is shown with variable reflector.

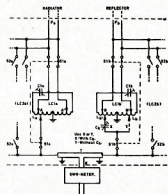


FIG. 5 With driven reflector, otherwise like FIG. 4.

* Abstract Translation from "DL-QTC", No. 9, 1968.

† Am. Zuckerberg, 4773 Koerbecke/Moehnesee, West Germany.

‡ 25 Berrile Road, Beverly Hills, N.S.W., 2209.

coil. It is recommended to add the trimmer Ck to be able to tune out the coupling reactance in order to obtain a low SWR. It is advisable to check the tuning of C1a and C1b with a calibrated GDO, with the quad connected, but the co-axial line disconnected (at first).

If the co-axial cable connecting points have been correctly chosen (matched condition), only a slight retuning of C1a and C1b is needed after the cable has been attached.

The reflector tuning is carried out by adjusting C1b (C1a may be rechecked finally), and a testing dipole

RESULTS

Absolute gain values are not quoted because a suitable test dipole (as high as the quad, at the right distance) was not available. The radiation pattern (Fig. 7) was obtained with the help of DJ5RH operating a high quality measuring receiver (Siemens, Type B83 600-A80) at a six miles (10 km.) distant location. The often quoted S meter readings of uncalibrated receivers are not accurate enough and often only wishful thinking.

The horizontal width of the radiated beam at the half power level amounts here to only 50° at 20 mx (75° with

ceived signal happens to come in (propagation, position and type of the other operator's aerial).

Measurements over the 21 to 21.45 Mc. band (Fig. 8) show some interesting features, which are also true for many other beams. One finds a maximum forward gain at 21.34 Mc. and a substantial drop at 21 Mc., whilst the SWR is within 1:1.2 and 1:1.4 over the entire band with the minimum near 21.2 Mc. (not 21.34 Mc.). The F/B ratio maximum is found at 21.3 Mc. (30 Kc. below gain maximum). It is clearly demonstrated that a high gain aerial is selective and has to be tuned to the mainly preferred Amateur band section to utilise its ability to advantage.

It may be mentioned that the described quad principle can be adapted to other quad forms like triangle yagis, helical horizontal, circular elements, Swiss (HB9CV) quad, etc. At v.h.f. it was noticed that a 50% increase of the loop circumference caused a marked gain increase. It may be possible to replace the three separate tuning units per element by one multiband tuned circuit (a la VK2AOU).

The author expresses his sincere thanks to Om Karl-Heinz Krah, DJ5RH, for the help during the aerial construction work and the assistance given during the many measuring runs.

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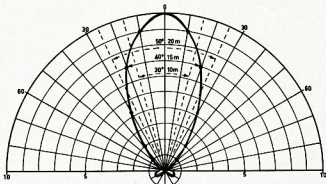


FIG. 7: Radiation pattern for DJ4VM quad for 20m, 15m (solid line) & 10m with driven reflector.

is used a few wavelengths behind the reflector and placed as high as the quad. The line between the test dipole (receiving diode) and the indicating instrument (near quad tuning box) must be r.f.-free and shielded to avoid misleading results.

Fig. 5 and Fig. 6 show a version with parasitic and one with driven reflector respectively.

The second case is shown in Fig. 6. In order to feed the radiator and reflector with r.f. of opposing phase, the co-axial line is split near the tuning units, and the leads from the switches (relays) S1a go to the left half of the coil L1a and S1b to the right hand side of L1b (case "Y"). The connecting points at the coils are slightly moved outwards (120 ohm) to achieve matching.

If a further improvement in the SWR is found to be necessary, the trimmer Ck (case "X") may be added (connection "Y" removed) and Ck is attached to the left side of L1b, e.g. left of the earthed centre tap. Ck and C1b are alternatively adjusted for SWR minimum.

The coil tap positions for the feeder leads from S1a and S1b (via Ck) are:—
20 mx band: 1.5 to 3 turns from the earthed centre.

15 mx band: 1 to 2 turns from the earthed centre.
10 mx band: 0.5 to 1.5 turns from the earthed centre.

The backward radiation minimum is very sharp. A SWR of less than 1:1.5 should always be obtainable at the tuning frequencies.

conventional full size quad values), 40° at 15 mx, 30° at 10 mx, and the half voltage beam width is 75° (90° with conventional full size quad values).

The narrow 20 mx beam is due to the quads' symmetry and the feeding of both elements, and the still narrower beam at 15 mx and 10 mx is the result of the extended elements (dipoles) used here.

The front to back ratio was on all the bands better than 40 db. (5 to 25 db. in some cases of multiband quads) for the version with driven reflector, and 25 db. with parasitic reflector. This ratio depends also on the (not measured) vertical radiation pattern of the aerial, e.g. the vertical angle the re-

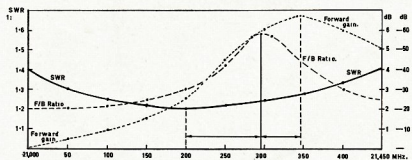


FIG. 8: F/B Ratio and forward gain variation of multiband quad (driven reflector) over 21 MHz band.

"IT"

A. J. C. THOMPSON,* VK4AT

We Radio Amateurs would not consider ourselves genuine unless we applied a little electronic touch to the solving of quite commonplace problems. We must be a sore trial to our more practical minded XYLS. This difference in our respective mental attitudes was startlingly illustrated quite recently on this particular radio active farm.

We have here a problem pup, much beloved until quite recently. His fall from grace was due to his base betrayal by an indignant hen. He was unlucky enough to get "copped" while still urging her to greater speed in the production of his breakfast egg. He repeated on the chain with a sore tail, but this sad experience only endowed him with the knowledge that caution and silence were essential in all exploits hen-wise.

My own XYL, after much experimenting, has developed quite a standard technique. At the first sound of a triumphant hen she "hushes" me in elegant sign-language while she takes a couple of audio bearings to pin point the exact position of the chook. Then she rushes out casting one suspicious eye on our egg-eating pup and the other on a crow that lurks in the big fig-tree waiting for his breakfast too.

If no egg is forthcoming, then a very strained situation exists. Both the crow and the pup know where the egg is but she doesn't. The pup has the wrong technique under these circumstances. Anticipating an examination of his molars, he slinks off to his kennel, followed later by a wrathful XYL who ties him up. He gets in a couple of conciliatory licks on her face while her hands are so engaged, but it doesn't do him much good (or her either).

It was evident then that the situation badly needed that delicate electronic touch previously mentioned, that is so exclusive to such as us. Some trusting soul had providentially just given me an electric fence to fix. It already had quite a good "kick" but my junk-box produced the goods to make it even better. I tried it out on an old cove that always licked out the chooks feed tin and it worked fine. A china egg with a groove in it to take the wire, some fresh egg yolk for its aroma and for disguise, some insulating material and some well wetted ground were all that were needed extra.

Along comes the pup but he stalks past it as he remembered past tribulation over public displays with an egg as exhibit A. He sat down and scratched a few imaginary fleas as he took stock of the situation, but as no excitement had erupted from the house, he confidently returned. Cautiously he approached it, keeping a wary eye on the house. A quick removal to a more remote spot was standard practice, but the beautiful aroma of egg yolk that assailed his nostrils made him decide to give it just one delectable lick first. He was astonished! He didn't know if he let go of it or "It" let go of him,

but he was first into his kennel and, although tightly jammed into the corner, it didn't take him long to be sure that "It" was not now with him too. He relaxed when he realised that he was temporarily safe. Then he gained enough confidence to even poke a little black nose and a suspicious eye out from his box. Re-assured, he ventured to give a few ferocious barks in the general direction of his enemy.

All was quiet. He ventured out, then hurried back (just in case . . .). He decided then that it had all been just one big mistake, so, out he came with his tail held high and jauntily strolled around looking for something to register a victory over, just to restore his shattered morale a bit. A fitting subject was right to hand in the outward garb of the family cat that he was currently feuding with. He cautiously sneaked up on her then "popped" it. Euse, highly bred and having nightmares, she suddenly assaulted, fled up the electric light pole, but, on seeing the familiar pup as the cause of her fright, she descended inelegantly and stalked home, outraged dignity depicted in fluffed-out fur and quivering tail. She paused long enough to swipe him "fore and aft" when he enthusiastically tried to "tree" her for the second time. Pup ignored the scratches on his rear end

AMATEUR T.V.

(Continued from Page 7)

directly into the valve that is being modulated. A few basic circuits may give you the general idea.

Finally, before I close this article for this month, I would like to summarise what I have said.

Television, being a logical development of radio, should interest you Amateurs immensely, it should be a challenge for Amateur Radio. Seeing that some of our fellow Amateurs are not only capable of transmitting television signals but are capable of transmitting colour, the moment the P.M.G. gives Amateurs the go-ahead, don't you think that Amateurs could do a little better than they have up to date? It is up to you, prove the cynics who say "ATV is too hard to handle" wrong.

Even if you cannot become actively involved in video you can at least give a great deal of support to those who are by at least taking an interest. You can show this by at least receiving some of these chaps and giving them a signal report. If you would like any specific information about any facet of ATV at all please feel free to contact the ATV group in Sydney or contact me by letter at my address, which is:

Grahame L. Wilson,
29 Goodlands Avenue,
Thornleigh, N.S.W., 2120.

If you wish you also may phone me at the above address, the phone number being 84-5478 after 6 p.m. I hope you have enjoyed reading this article. I certainly enjoyed writing it. If you have liked it or you would like any particular item discussed, write to me personally or the Editor of "Amateur Radio."

In the next part I will be discussing cameras and the "systems" they employ with the theory behind it.

to rub his lacerated nose through the long grass, even though it made him sneeze.

This brought him back to the vicinity of the egg. He was dismayed to see that a broody hen had beaten him to it, and, with happy clucky noises was just settling on it. From past experience he knew that clucky hens were hard to shift. They fluffed up their feathers with queer noises then pecked him on the nose. This one fortunately acted quite differently. She rose suddenly with much melody, exposing his precious egg, so he nicked in quickly and got it right from under her nose.

He wished he hadn't. "It" had got him again for sure, but fortunately let go of him while he was still in the air on the return journey. With his superior speed, he was again able to reach the safety of his own kennel. Temporarily safe he then decided to stay put and just brood on the hard lives that pups lead on these farms where even the cows with calves kick playful puppies on the nose then roll them in the dirt and bellow in their ears. Now "It" had got his breakfast egg and bitten him twice. But he cheered up when he saw a silly hen approaching intent on swiping one of his discarded crusts. He hunched up ready to pounce. Now this was going to be real fun.

1969 VK4 SOUTH SEA ISLAND CONVENTION

This year the State Convention will be held at Brible Island on the weekend of 7th and 8th June. Mark your calendar now.

Council has had a preliminary discussion and May "QTC" will give final details. Also VK4WI will have up to date news.

The Convention will have as its main interest a Saturday evening function along the lines of an Hawaiian night—casual dress, help yourself to dishes, music, laughing, talking—good fun consisting of a buffet meal followed by a full evening's entertainment which should cater for all. We hope to make this function a most memorable occasion and its success will be ensured by your attendance. It will not be a problem for many to return home if not staying that evening. Settle in on Saturday morning, visit places of interest, set up shop, etc.

Saturday afternoon will be set aside for technical sessions when it is proposed to have experts deal with printed circuits, interference problems, modern circuitry, r.f. equipment, etc., with displays and opportunities for queries. Technical literature will be available. Of course those who wish may surf, play bowls, swim, etc.

Sunday morning, VK4WI will be operating and h.f. and v.h.f. contents, together with displays, will be the order of the day. The time for a general meeting followed by presentation of trophies and the auction.

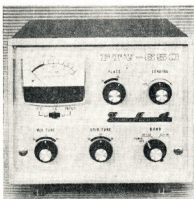
Accommodation will be to suit you and your pocket—camping, stationary caravans, motels, flats, luxury hotels. Men's single accommodation will also be provided. For bookings for any of these, contact Ross Cuttle, Cunningham St., Brible Island; phone 53-1070. Children will be catered for with competitions, organised games and entertainment.

Our planning will be simplified if we know you may come. Get a message through to us. Of course we know who will be along on Saturday night for the dinner and fun.



New Equipment

SIX METRE TRANSVERTER



The Yaesu Musen Model FTV-650 Six Metre Transverter takes a 28-30 Mc. signal and transverts to the six metre band in two ranges.

Transmitter: Input frequency range, 28-30 Mc.; input drive, up to 3v. r.m.s.; input, high impedance; input power to p.a. (S2001), 50w. d.c.; output frequency (two ranges), 50-52 Mc. and 52-54 Mc.; output impedance, 52-75 ohms.

Receiver: Frequency ranges, 50-52 Mc. and 52-54 Mc.; antenna input impedance, 50 ohms; sensitivity (when used with FRDX-400), better than 0.5 uV. for 10 db. S/N (s.s.b., c.w.), better than 1 uV. for 10 db. S/N (a.m., f.m.); image rejection, better than 50 db.; output frequency range, 28-30 Mc.; output impedance, 50-75 ohm unbalanced.

Power requirements (external): 6.3v. 3.5a. a.c., 150v. 30 mA. d.c., 300v. 50 mA. d.c., 600v. 150 mA. d.c., -100v. 20 mA. d.c.

Valves used: two 6CB6s, one 6AW8A, one 12BY7, one S2001 (p.a.).

Dimensions: 6½" (square feet) h., 8" w., 11½" d.

Further information from Ball Electronic Services, 60 Shannon St., Box Hill North, Vic., 3129.

PROVISIONAL SUNSPOT NUMBERS

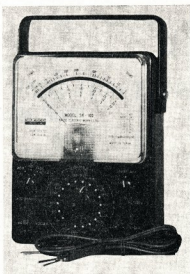
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Dependent on observation at Zurich Observatory and its stations in Locarno and Arosa.			
Day	R	Day	R
1	113	16	84
2	115	17	77
3	122	18	96
4	128	19	101
5	134	20	106
6	133	21	101
7	126	22	119
8	132	23	122
9	140	24	125
10	119	25	132
11	83	26	140
12	58	27	154
13	84	28	133
14	86	29	139
15	88	30	117
		31	119

Mean equals 112.8

Smoothed Mean for June 1968: 107.0.

—Swiss Federal Observatory, Zurich.

WIDE RANGE TESTER



The 'Rapar' Model SK-100 Tester is a full size meter suited for professional and Amateur use. Features include overload protection, mirror scale, and is fitted with nickel plated test prods.

Sensitivity: 100K o.p.v. on d.c.; 10K o.p.v. on a.c.

The 23 ranges include—DC Volts: 0-0.6, 3, 12, 60, 300, and 1200. AC Volts: 0-6, 30, 120, 300, 1200. DC Current: 0-12 uA., 300 uA., 6 mA., 600 mA., and 12 amp. AC Current: 0-12 amp. Ohms: 0-20.0 megohms in four ranges. Centre scale reading: 150 ohms, 15K, 150K. DB: -20 to +17. (0 db. = 1 mW. in 600 ohm line).

Further details from Radio Parts Pty. Ltd., 562 Spencer St., Melbourne, Vic., 300, and City and East Malvern branches.

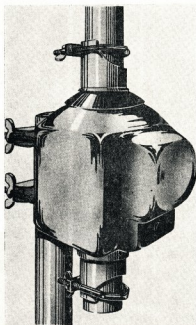
AUTOMATIC AERIAL ROTATOR

Designed to suit many applications requiring aerial rotation, the Stolle automatic rotator provides positive control from a fully synchronised unit by means of a balanced bridge circuit using transistor amplified control.

The connecting cable between the control unit and the drive unit operates from low voltage (42v.); when the rotation cycle is complete, the power shuts off automatically, and draws no current until it is activated again by turning the control knob.

The drive unit consists of a water-tight cast metal housing with hollow shaft to take mast up to 1½" diam. Other features include: High carrying capacity (max. load 112 lb.), motor shaft bearings permanently lubricated, rotation angle 360 deg. (limited by stop at end of rotation), speed 1 rev. per minute, magnetic disc brake with self-restraining worm gear holds aerial in position.

The control unit is housed in an attractive moulded case, with 240 volt a.c. power supply (60w.). Push-button control sets the direction of rotation, left to right, while the dial indicator shows the direction of the aerial at all times.



Trade price: \$45 plus sales tax. Further details from R. H. Cunningham Pty. Ltd., 608 Collins St., Melbourne, Vic., 3000.

NEW W.A. BRANCH

R. H. Cunningham Pty. Ltd. have opened a branch office in Western Australia at 34 Wolya Way, Balga, Perth, 6061. Manager is Bob McGrath, and the phone 49-4919.

RADIO PARTS CHIEF OVERSEAS

Mr. Allen Swann, governing director of Melbourne wholesale components house, Radio Parts Pty. Ltd., is currently in South America on a three months' holiday-business tour. Accompanied by his wife and daughter, Mr. Swann will visit principal capital cities and will investigate electronic manufacture and development. He is expected to return to Australia about May 24.

TECHNICAL AWARDS

The awards for technical articles published during the year ended February 1969 have been made to the following Amateurs:

H. F. Ruckert, VK2AOU.

A. S. Lundy, VK2ASI.

R. B. Zielinski-Petersen, VK5ZIE.

The Publications Committee extends its congratulations to these gentlemen, and thanks them for their submissions.

Overseas Magazine Review

"QST"

December 1968—

What is R.T.T.Y.? K1PLP. Description of the process with the steps that need to be taken to get on the air on r.t.t.y. including modulating and demodulating techniques.

The Chirp Magnifier, W2KXV/L. This is a device for increasing the amount of frequency drift or keying chirp from a v.f.o. An ordinary transistor radio can be used as an indicator if required. The answer for the "transceiver man".

Gimmicks and Gadgets, W6HDO. The author describes a converter to put v.h.f. f.m. 128-148 Mc into the standard v.h.f. f.m. h.c. band of 88-108 Mc and receive it on a normal f.m. receiver. Hardly applicable in Australia without an f.m. service.

A Solid State Product Detector for the HRO 69, W6PHF. A silicon diode ring de-modulator (detector) and i.f. stage module to improve s.b. and c.w. operation of an old standard receiver. The technique could probably be applied to a number of older receivers in use in Australia. ARRs could use this "as is," whilst ARBES, BC48S, ARSs, etc., will require a change in the i.f. amp in the detector to suit the receiver being modified.

An Impedance Matching Method, KTKOK. Combining the balun and the L network. Design details are given for tuning networks for a number of Amateur bands.

Is a Balun Required? W1ICP. Lewis McCoy describes the advantages and disadvantages to be obtained from the use of these devices.

Synchronous Weak Signal Detection with Real Time Averaging, W8DEX and R. T. Wood, R. T. Wood, R. (Rox) and R. M., who was well known for his Amateur activities before leaving for the U.S.A. Ross describes a system of digging very weak signals out of the noise by the technique of averaging for use in medical research and has now been applied to 144 Mc. moonbounce work.

A Solid State Audio Filter, W8BNC. An i.f. bandpass filter with 100 db rejection (loading coils), one PET and an R.C.A. IC (CA3260) to be used with receivers or transceivers. The bandwidth is about 10 cycles at —3 db. The bandwidth is about the lowest practical limit as Morse at 25 w.p.m. needs a minimum bandwidth of about 75 cycles.

Further Improvements in the 32S-3, W4AX. A simple method of reducing spurious heterodyne products that have been observed in the output of the 32S-3 transmitter. Interested parties are referred to a previous article by D. P. Shafer in "QST" Nov. 1964. It may be appropriate to point out to members that the Public Library in Melbourne has no doubt others also have "QST" and other magazines available in the reading room. A copying service is available at reasonable prices.

A Two-Stage Transistor Pre-Amplifier for 1296 Mc, W8WVTR. Using special transistors, a low noise r.f. amplifier is described.

A 40 Ft. Self-Supporting Tilt-Over Mast for 1296 Mc, W1WYV. With a tilt like that who needs a resumé!

Combine V.h.f. Bandpass Filters, W2CQH. Since narrow interdigital filters tend to be too large for convenient use at 144 or 50 Mc the author loads the ends of the lines with capacitors.

"RADIO COMMUNICATION"

December 1968—

Design for a Solid State Linear Amplifier, G2HPF. Factors essential to the stability and "fail safe" features of a 144 Mc. linear amplifier are discussed. The criteria for interstage coupling and feedback are established. A theoretical approach to the design is suggested. The parameters of a complete amplifier are given in a table. An example of a linear amplifier is stated to be capable of 20 watts p.e.p. (in British tradition, this should be output). It is a very neat design that appears to be reasonably easy to duplicate and could interest a large number of our v.h.f. men if the 2N3633 transistors are available at reasonable prices in this area. It may also carry lessons for the h.f. men.

Technical Topics, G3VA. In this regular review type feature, Pat Hawker discusses "Line Detection" for the amateur approved by "Narrow Band Convents from ZSB87" who dis-

cusses the receiver requirement necessary for reception of weak c.w. DX in the presence of strong interfering signals. "What's happening in the co-ax?" FSZP set in details of a simple device for checking the current flowing in the outer sheath of the co-ax feeder. It consists simply of a toroid wound with a number of turns feeding a diode and an indicating meter. "Voice Peaks on S.A.B." and "Capacitively Loaded Dipoles" are the other two subjects discussed.

GLUB R. C. and L. Bridge. The author sets out "the aim of the design" after the introduction, but, nowhere in the article does he set out a specification as it was achieved, nor does he give a clear indication of the level of accuracy to be expected from the bridge. This latter probably depends upon the calibrating facilities available to the builder and the in-built precision of one or two critical components. This is probably the most detailed bridge construction article which has been published.

"SHORT WAVE MAGAZINE"

December 1968—

Direct Reading Reflectometer, G3UXP. This unit which is based on the Monimatch design from QST has a number of things to recommend it. First and foremost is the ease with which individual adjustment pots, semi air-spaced dielectric co-ax is used which makes for ease of use. Second is the accuracy of design will give f.s.d. of the meters with less than 10w. input on 1.8 Mc., and the unit is very neatly built into an Eddystone type die-cast housing.

R.T.T.Y. Station Control Simplifier, GBLT. This is a continuation of the article which commenced in the November edition of this journal.

Reversing the Car Electric, G2ESP. In these days of alternators, it is, of course, necessary to make major alterations to the device itself before it can be successful. With a generator, the matter is much simpler. The author describes the way to go about it. I have heard that with most cars it is only necessary to (1) reverse the battery polarity, (2) momentarily close the cut-out manually, (3) start vehicle and check that charging is now taking place in the correct direction.

Notes on the Trio JR-9008 Receiver, G4HR. Having purchased an inexpensive receiver and become aware of its shortcomings, the author proceeds to modify it and overcome them.

Centre Fed Multi Band Aerials, G3GGR. Design considerations for various types, feed-in and tuning. Simple series and parallel tuner.

Reliable Mast for Beam Working, G3MQV. The design of a simple unit for manual operation is described.

Transistor Converter for Four Metres, G3PRX. A mini converter to suit a tunable I.F. of around 20 Mc. is described.

The ZL Mint Quad, G3PHO/ZLBRD. The 20 mx quad is only 10 feet on a side and elements are spaced 7 ft. 9 in. apart. Both elements are driven. The author reports that such a small size of quad is not to be considered satisfactory until he built this quad. After completion there was no trouble. Of course the author should have stated it would be possible to make a quad for 40 which was no bigger than the usual 20 mx quad. What say someone? V8AAR at Warrnambool is supposed to have one.

"73"

November 1968—

Computer Card Transmitter, K1EUG. Plug-in components. (Grid leaks do not plug in!)

Crystal Filters, W3RET. The heart of s.b. This is an article which intrigued our reviewer greatly on a number of points. (1) The author is employed by Motorola. (2) He specifies his so-called ideal characteristics such as 6 to 80 db. shape factors of about 1.5 or less. (3) McCoy Electronics, Inc. publishes the Silver Sentinel 32B1 and Golden Guardian 48B1 shape factor 6 to 50 db., 1.8/1 and 1.5/1.

Pop and pop shown about 45 db. down on the 32B1 and 55 db. down on 48B1, showing that the ultimate rejection is worse than the figures are stated to be. The author says that since McCoy have sold filters for some time, one would believe, attainable. Maybe there is a strong argument for the home grown product which although it may not be better than the highly advertised U.S. line, is cheaper and no worse.

Trap Shooting Solid State, K1PBY. Modern day problems solved—the author discusses methods of trouble shooting solid state circuits.

I.C. Frequency Counter, W8BBS. Easy to build counter for the amateur approved by an interesting article for the applicant solid state

fan. The author claims the 20 Mc. counter can be built with \$120 (U.S.) worth of semi-conductors, etc.

C.V. Transducers for Ham Applications, W4QCF. Constant voltage transducers are very useful devices and with most pieces of equipment are very useful for maintaining a constant voltage in the shack. Notwithstanding this, most equipment, especially if fitted with electronic d.c. regulators, does not take kindly to the waveform distortion inherent in the output of a c.v.t. Voltage should be measured by a moving iron meter or current by moving iron, hot-wire or thermocouple type r.m.s. reading instruments.

Space Communications Odyssey, K6BW. It isn't going to be easy to keep in touch. Perhaps one should ask him if space travel is easy?

Surprise in the Skies, W1EET. Pulsars—what are they?

Using Thin Wire Antennas, W2EY/L. Fooling the landlady, or what the eye does not see the heart does not grieve.

A 7 Mc. Transistor Transmitter, W4JND. An all transistor rig for 40 mx running 8-10 watts input and with a r.f. receiver in the same case. Battery powered transmitter from one 45v. super duty B battery. This needs a good place for one of those small b.c. receiver/converter type superhet rx's with b.f.o.

Double Conversion Receiver, W3CHM, W1VZF. By using the i.f. strip at 8 Mc. from a BC48S he double converts his BC348 and makes it suitable for s.b.b.

The Getras, S.A.J.Z. A "do all" test set for receivers the nation's closer investigation comes from "Generating and Tracing". According to the author it does what he says it does and that should stand.

Harness Your Wiring, K3LLI. A professional wiring job for home-brew of lovely, laced looms!

Copper Wire, W1EET. The forgotten component. The author discusses wire conductivity of various metals and alloys, wire gauges, etc.

Who Said Yes Can't Take It With You? W8ABM. Or taking the Amateur station to college.

The Thermistor, W8BBIH. How to use this device for measuring purposes, especially temperature measurement.

Using S.C.R. in R.T.T.Y. Series Wound Motor, W8BBIH. Some telemetry machines use series type drive motors with a condenser governor and consequent sparking at the contacts, which interferes with reception. Our series drive using an S.C.R. to conquer the demon spark.

New High Voltage Transistors, K3VCK. The author lists 14 types numbers with BVcbo from 90 to 1000v.

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FAIRCHILD INSTRUMENTS

Details will shortly be released of the range of Fairchild instruments available in Australia direct from Fairchild.

The Fairchild instrumentation range offers industry a broad line of digital multimeters, panel meters, electronic time and frequency measurement instruments and a curve tracer that is fully programmable.

The following instruments will be available:

Model 7050—A low cost digital multimeter.

Model 7000—A half rack digital multimeter.

Model 7200—An integrating digital multimeter.

Panel mounting digital meters:

Model 8040—A low cost frequency meter.

Model 8050—A 30 Mc. frequency/period meter.

Model 8220—A 500 Mc. digital frequency meter.

After-sales service will be provided and all information re availability, specifications, etc., can be obtained by contacting Fairchild at their Croydon, Victoria, production plant, or any of the Fairchild representatives.

1969 Annual Report to Federal Council

The Federal Council of the W.I.A.,
Gentlemen,

PREAMBLE

I present to you, on behalf of the Federal Executive, a report on the activities during the period subsequent to the 1968 Sydney Federal Convention, as required by section 33 (iv) of the Federal Constitution.

The report follows the six sections traditionally used to classify motions at a Federal Convention, and deals with each section in turn. For each matter, where possible, I present a statement in the following form:—

- Institute policy.
- Subsequent actions.
- Future determinations.

In beginning this report, I wish to state that I have throughout referred to "Executive" or "members of Executive" in relation to the matters attended to on behalf of the Institute. I have done so because I feel that W.I.A. officers accept a duty to work on behalf of the organisation. The satisfaction gained is gained because the organisation is strong and active. I believe that any kudos attracted by actions of W.I.A. officers should attach to the W.I.A.

Of course, it is a corollary that the organisation cannot progress without hard work being done by its honorary officers, and administrative staff. To the members of Executive who have given me, and therefore the Institute, such fine support, I am grateful and thankful for a job well done!

1968-69 FEDERAL OFFICERS

Federal Executive—

Federal President: John Battick, VK3OR.
Federal Vice-President: Michael Owen, VK3KI.
Federal Secretary: Peter Williams, VK3LZ.
Federal I.T.U. Liaison Officer: George Pither, VK3JH.
Federal Treasurer: Kevin Connolly, VK3ARD.
Federal Executive Member: Alf Seedsman, VK3JH.
Federal Activities Officer: David Rankin, VK3QV.

Federal Co-ordinators of Activities—

Federal QSL: Ray Jones, VK3RJ.
Federal Intruder Watch: David Wardlaw, VK3ADW.
Federal Radio Editor: Ken Pincott, VK3AFJ.
Federal S.W.L.: Eric Trebilcock.
Federal Awards Manager: Geoff Wilson, VK3AMK.
Federal Contests: Neil Penfold, VK6ZDK.
Federal W.I.A. Y.R.S.: Jim Webster, VK3CZW.
Federal Journal Editor: Peter Williams, VK3LZ.
Federal Historian: George Glover, VK3AG.
Overseas Publications: Alf Chandler, VK3LZ.

Immediate Past Federal President—

Max Hull, VK3ZS.

Section I.—CONSTITUTIONAL

MATTERS

PROPOSED NEW FEDERAL CONSTITUTION

It was reported to the last Federal Convention that the solicitors acting on behalf of the Institute in relation to this matter had said that further delay was likely. In the course of this year, Executive was advised by the solicitors that, except in relation to the articles in the articles as drawn, would be granted the Attorney-General's approval. With one exception, the matters were of a minor machinery nature and could be dealt with in relation to the proposed postal referendum. These provisions had been inserted at the request of the N.S.W. Division and had been the subject of extensive debate.

The matter has been referred to the Divisions for instructions. Once the Divisions are in agreement as to what course is to be adopted, the Executive will be asked to consider the matter. An appropriate motion has been submitted to Federal Council for consideration at the Federal Convention:—

Motion 1969 1.1: "That this Federal Council formulate an instruction to the W.I.A. solicitors to enable them to proceed with the submission of the proposed new Federal Constitution to the Attorney-General."—Moved F.E.

EXISTING FEDERAL CONSTITUTION

During the year, Federal Secretary has undertaken a great amount of research through back records of the Institute in order to check the exact constitution of the Institute at this time. Executive will prepare copies of the present Federal Constitution embodying all past amendments and be considered up-to-date. Federal Council will thus all have a copy of the existing Constitution in common form.

A number of motions referring to amendments of the present "old" Constitution will be before the 1969 Convention for discussion, and I commend to you a perusal of Section X, which lays down the procedure to be adopted so that it is wished to amend the existing Constitution.

Section II.—POLICY ITEMS

"AMATEUR RADIO" MAGAZINE

(a) Policy 1968/2.1: "That the cost of 'Amateur Radio' to the Divisions be increased" was moved by the publishers, the Victorian Division, who sought an increase in the cost to members of five cents per copy. This would have brought the cost up to fifteen cents to twenty cents per copy. However, after long debate, this motion was lost. Following that motion, the Queensland Division introduced two "motions arising":—

2.1.1: "That a sub-committee be formed to urgently investigate all aspects of 'Amateur Radio' production comprising representatives from VK3 Division and Federal Executive," and also:

2.1.2: "That the cost of 'Amateur Radio' to Divisions be increased by twenty-four cents per member p.a."

These two motions were carried by majority.

(b) Subsequent Action: The Publications Committee of the Victorian Division has increased the cost to members from fifteen to seventeen cents per copy for 1968-9, and the effect of this has been a major part of its financial statement. Executive appointed Federal Vice-President VK3KI to convene a sub-committee to investigate the matter. He was joined by Federal Treasurer VK3ARD, Victorian President VK3YQ and the Editor of "Amateur Radio". This sub-committee undertook a very detailed investigation, over a period of six months, of all aspects of publishing "Amateur Radio". The committee has concluded its investigations and has submitted a twenty-page report to Federal Council. The convenor stated that he was satisfied that the Publications Committee was doing the most demanding job in a most responsible way. He thanked the Editor and VK3 President for the many hours put into his work over six months, and also thanked Don Watson, VK4DZ, who sent quite a lot of constructive material and comment to the committee.

During the time the sub-committee was carrying out its investigation, close liaison was maintained between Federal Executive and the Division publishing the magazine on behalf of Federal Council. Both VK3 President and the Editor of "Amateur Radio" attended Federal Executive meetings to discuss matters pertaining to "Amateur Radio" and Executive was at one stage asked to state its views on the future of "Amateur Radio", which was said to follow the resolution.

"Federal Executive acknowledges the vast amount of effort put into the collection of material for submission to Divisions by K. Pincott. Federal Executive does not presume to direct the publisher in relation to the future of the magazine, but suggests that the following points should be acceptable:—

- The magazine should continue to be published.
- Any arrangement by virtue of which the provision of working capital is not a burden on the Institute or on a Division is desirable subject to the retention of editorial control by the Institute.
- Any arrangement should result in some profit to the Institute.
- F.E. recognise that the negotiations towards these ends must be left in the hands of the publishers."

The sub-committee investigated and reported on:—

- "Outside" publication of "Amateur Radio".
- Actual costs of "Amateur Radio".
- Future costs of "Amateur Radio".
- Letter from VK4DZ.
- General matters.

The sub-committee reached the following four general conclusions:—

- That "Amateur Radio" in anything like its present form cannot reasonably be produced more cheaply by other methods by other printers.
- A partial solution lies in the future exploitation of the advertising potential of the magazine and to achieve this it is economic to utilise the services of a specialised advertising agency. This had already been done.
- That if Divisions wish Divisional Notes to be restored or any other feature to be added, this will involve additional cost (in the case of Divisional Notes, 3 cents). In the last resort this is a decision for the Divisions, not the publishing Division, as in fixing a price the Divisions must accept responsibility for the magazine content.
- It seems likely that costs will continue to increase. It will be reasonable for the publishing Division to continue to seek price increases. These cannot at this time (November 1968) be quantified; all we can say is that we are satisfied that further cost increases cannot be absorbed.

During the investigation it became apparent that more data was needed by the publishers to assist them in making decisions relating to the magazine. Accordingly a questionnaire was included in "Amateur Radio" and was reported on in recent issues, and a "Federal Comment" in a recent issue referred to the questionnaire. The questionnaire was a complimentary copy to a friend. A statement of costs of the magazine to W.I.A. members was sent to the cost of direct subscription was also mentioned.

In addition to the material supplied by Queensland Division, N.S.W. Division made other contributions to the sub-committee. One of these referred to the transfer of all publications to Federal Executive for publication in the new Federal Constitution. Another comment referred to the deletion of "Pubcom" reports from "Amateur Radio". Executive passed this matter to the Editor for comment and his reply was forwarded to the N.S.W. Division.

During the year, Executive has continued to use the official organ of the Institute to inform members on various matters.

(c) Future Determinations: At the 1969 Canberra Convention, the Publications Committee of VK3 Division will report on last year's activities, and it is hoped that Federal Council will be able to consider the future of the "official organ" of the Institute. I believe that any agreement must be realistic in the economic sense of the word. Federal Council wish one Division to publish on its behalf. VK3—the publishing Division—has again moved the issue of "Amateur Radio" to Divisions be increased."

The aspect of publication of "Amateur Radio" by Executive raised by VK3 Division was discussed at the 1968 Sydney Convention by the Institute of the proposed new Federal Constitution. As pointed out earlier, Scheme has been put forward for instructions on this constitutional aspect.

YOUTH RADIO SCHEME MATTERS

(a) Policy: The matters were raised at the 1968 Convention as a result of motions moved by the N.S.W. Division, viz:—

1968/2.2: "That Federal Convention confirm the title of the Youth Radio Club Scheme of Australia, Youth Radio Club Scheme Division" and that the scheme is an educational instrument of the Wireless Institute of Australia for the promotion of radio and electronics in schools and clubs."

1968/2.3: "That in view of the fact that so many members of the Youth Radio Club Scheme are not members of the Wireless Institute of Australia, that the Federal Convention

encourage all Divisions to institute a form of student scholarship at a nominal cost to the Youth Radio Club.

1968/2.4: "That in view of the Youth Radio Club Scheme of Victoria and its associated correspondence section claiming to be affiliated with and not under the control of the Wireless Institute of Australia, that the Federal Convention endeavour to strengthen the bonds between these two bodies and the Wireless Institute of Australia."

These should be read in conjunction with 1966 motion 2.7.1: "That the W.I.A. provides a service for Youth Radio Clubs designed to assist the development of these Clubs. It cannot accept any responsibility for any action or views expressed by or on behalf of any of the Clubs, but that the substance of this motion be generally made known."

(b) Subsequent Action: Following the 1968 W.I.A. Federal Convention, a meeting of teachers assisting with Y.R.S. activities was held in Melbourne. These were Y.R.C.S. Supervisors from VK2, 3, 5 and 7, and others, and I attended their Convention by invitation. The meeting decided to form a Federal co-ordinating body of their own—the Y.R.C.S.A.—for co-ordinating syllabuses, standards, administration, etc. The meeting also decided to work for closer cooperation with W.I.A., and a wish to be affiliated with W.I.A. but not controlled by it.

The Federal Executive was later supplied with a copy of the motions passed at the Y.R.C.S. Convention by the teachers attending. Division 10 was supplied with a copy of the Y.R.C.S.A. motions. Subsequent to that the N.S.W. Division drew Executive's attention to the decisions made in Melbourne in June with regard to the name of the Y.R.C.S. Also requested Executive to take immediate steps to ensure that the policy of the Institute was adhered to.

Executive referred the matter to Federal Co-ordinator of W.I.A. Y.R.S. and asked for clarification of the relationship between Y.R.C.S.A. and W.I.A. Y.R.S. In reply, the Y.R.C.S. indicated that Y.R.C.S. was in effect a "separate" body with its own organisation, but was affiliated with the W.I.A. in different ways in different States.

After much discussion between Divisions and Executive on the matter, Executive requested the Federal Council to consider how to implement W.I.A. policy as it affected Youth Radio Clubs.

It is pleasing for Executive to note from the Youth Radio Scheme is indeed flourishing. Executive thanks the teachers who are assisting W.I.A. with its objectives.

(c) Future Determinations: No motions on N.S.W. Division's request were forwarded for the 1969 Convention. There will be a report from W.I.A. Y.R.S. Co-ordinator to consider. No reports on how Divisions have complied with Motion 1968/2.3 have been received by Executive, nor has any report been submitted on 1968/2.4.

NOVICE LICENSING

(a) Policy: This was determined in 1958 and amended in 1962 and 1965. The policy item FED 1962/2.1 reads:

"That the following proposals regarding Novice Amateur Transmitting Licences be used as a basis for action by the Federal Executive with the appropriate authorities—"

- (a) Morse code test of 5 w.p.m.
- (b) Elementary examination in radio theory (at a lower standard than required for 2 and 3 M.M. exams)
- (c) Operation to be allowed on the 3.5, 27 and 28 Mc. bands using c.w. only, and control.
- (d) Power maximum 10 watts.
- (e) The A.O.C.P. examination must be taken by the end of 12 months, the Licences will be renewable except at the discretion of the P.M.G.'s Department."

At the 1968 Convention the following motion was passed:

1968/2.1: "That the Institute no longer advocate the issue of Novice Licences by the Australian Administration, with the reduction in the code standard," and then a motion arising was carried:

1968/2.5.1: "That the Federal policy item FED 1962/2.1 be amended by adding the words 'It is the policy of the Institute—'"

(b) Subsequent Action: Executive has undertaken no activity in relation to Novice licensing, believing that there is no current W.I.A. action in relation to Novice licensing following 1968/2.5.

(c) Future Determinations: At the 1969 Federal Convention Federal policy will be considered as a matter of course. Executive will request some guidance from Federal Council in relation to the approach to be taken between 1968/2.5 and the motion arising 1968/2.5.1.

CODE SPEED TESTS

(a) Policy: This was determined at the 1968 Federal Convention by two motions brought forward by the VK7 Division and passed by Federal Council:

1968/2.6: "That Federal Executive consider the introduction of code speed tests within and conducted by the W.I.A. with a view to allowing any member so wishing to increase his code speed and be able to obtain a proficiency award."

1968/2.7: "That Federal Executive produce if necessary a code proficiency certificate to which code proficiency awards could be attached."

(b) Subsequent Action: Executive has been unable to consider this with sufficient attention to be able to suggest any action to be taken. The matter was discussed briefly with the VK7 Council by Federal President and Vice-President during a recent visit to Tasmania. The matter is still being considered by Executive.

Section III.—ADMINISTRATION:

I.T.U. FUND MONIES

(a) Policy: This stemmed originally from the policy item Fed. 18 inserted in 1963:

"That the following plan for the next I.T.U. Convention be implemented—"

- (1) That P.E. maintain a brief for the official W.I.A. representative.
- (2) That means of financing representation be determined and implemented.
- (3) That by Easter 1965 the Divisions shall raise a minimum total of £3,500 (\$7,000) by a minimum contribution as follows—VK2, £1,500 (\$3,000); VK3, £900 (\$1,800); VK4, £425 (\$850); VK5, £250 (\$500); VK6, £225 (\$450); VK7, £200 (\$400).
- (4) That the sum raised be paid to the Divisions be paid to Federal Executive each six (6) months and Federal Executive shall hold the same in the I.T.U. Fund.

In addition, policy item I 01: "That after the targets for the I.T.U. Fund have been achieved, all future monies collected for similar purposes be collected in a general fund for the representation of the Amateur Service."

And motion 1967/2.5: "That in accordance with G.B. item 1 of the 1966 Federal Convention those Divisions who have not fulfilled the quota laid down do so from Divisional funds and immediately refer to I.T.U. Fund monies."

At the 1968 Federal Convention a number of motions were forwarded relating to handling of I.T.U. monies. Only one of these was carried:

1968/2.2.1: "That the Executive transfer the I.T.U. Fund into a separate bank account or have the 31st day of May, 1968, and that to the balance shown in the accounts of the Institute dated the 28th day of February, 1966, and any further contributions to the fund received by the Executive after the 28th of February, 1968, shall be added the sum of \$300 which is deposited in the bank account, the interest which would otherwise have accrued to the Fund from the first day of March, 1964, until the 31st day of May, 1968."

This motion gave direction to Executive on the matter of interest accruing to I.T.U. monies, and established a policy for banking procedures.

(b) Subsequent Actions: Following the 1968 Convention, Executive took steps to comply with this motion 1968/2.2.1, and I.T.U. monies are now contained in a separate bank account. This motion gave direction to the VK3, 4, 5, 6 and 7 Divisions have filled their quotas as specified in Fed. 18, in accordance with 1967/3.5.

(c) Further Determinations: At the 1969 Federal Convention, Federal Treasurer will present a financial report which will refer in detail to these I.T.U. Fund matters. The amount and interest on special bank account is \$6,306 at the present time.

Section IV.—I.T.U./I.A.R.U. MATTERS REGION III.

(a) Policy: Motions setting the background to Region III activities are from 1965 and 1967. The motions are: "That the Federal Council conducted long debates on these matters. At the Hobart Convention, motion 1967/4.1 was carried:

"That Federal Council examine the way and the means by which liaison and assistance can be given to other countries in Region III, and that a policy embracing one or more of the attached proposals, alternatives and questions."

During discussions on that motion, Divisions agreed that Executive should investigate the

whole matter and put a proposition to the W.I. Council, item 1.1 forming this agreement:

"That the Executive prepare a detailed submission suggesting a policy to be adopted in relation to the Amateur Service in South East Asia and the Southern Region III."

In addition, 1967/4.5 was discussed: "That after due consideration of the attached Region III report and any other evidence, Federal Council outline its policy on the five questions listed at the conclusion of the said report."

After longer than discussion revealed that Federal Council needed more time for reflection and more information on Region III, before coming to a view. Accordingly, it was resolved: "That the Executive table this motion (4.5) be adjourned 'sine die'."

Following the 1967 Convention, Executive members contributed material to "Amateur Radio", Executive circulated material to the Divisions, and appointed a sub-committee to implement 1967/4.1. In view of this proposal, During the year an Executive member visited many overseas countries during the course of a business trip, and kept F.E. informed on current thinking.

As a result of these reports sent back to Executive, it was decided to recommend to the W.I. Council that Region III be called and that it be held concurrently with the 1968 W.I.A. Convention in Sydney. W.I.A. agreed to this, and accordingly Executive issued the necessary invitations to the Region III Congress is now a matter of record.

At the 1968 W.I.A. Convention, several motions were resolved in connection with Region III. It was resolved that "Federal Council of W.I.A. endorses the action of Federal Executive in conducting the Inaugural Region III Congress, and also states that it will consider financial support to any Region III organisation formed as a result of the Congress."

That the resolution be forwarded formally to the opening session of I.A.R.U. Region III Congress that evening, Friday, 12th April, as reported in "Amateur Radio" Australia's position.

1968/4.1: "That immediate action be taken to implement the action of the Congress on the discussions under Items 2, 4, 3, 4.4 of the 1966 Federal Convention, Items 4.1, 4.5, 1967 Federal Convention, and the action of the Region III Federal Executive in relation to Region III organisation."

1968/4.1.1: "That the W.I.A. shall contribute \$600 by December 1968 as its contribution to the I.A.R.U. Region III organisation, and similar contributions to the Region III Congress 1970, and to provide such sum each Division shall collect 20 cents in respect of each of its members' organisations."

1968/4.1.2: "That Federal Secretary convey the following statement to I.A.R.U. Region III Congress:

1. The W.I.A. thanks the Amateur Societies of Japan, New Zealand, the Philippines and the I.A.R.U. Headquarters for sending delegates to this inaugural meeting of Region III.

2. The W.I.A. is desirous of joining with these countries in co-operating to achieve a workable regional organisation, and if the participants in that Society so request, W.I.A. will offer what administrative assistance it can, and provide what office facilities it can.

3. The W.I.A. will authorise its Federal Executive to contribute \$600 each year for this triennium ending May 1971 to assist the regional organisations in Region III. This sum will be reviewed before the second triennium commences."

Following the Region III Congress statement was issued which included the following points on organisation:

"It was resolved that there will be a board of directors, one from each Society represented and one from the I.A.R.U. The President of the I.A.R.U. also to be a Director. The Wireless Institute of Australia is to provide a Director, and will be appointed by the Institute in consultation with the W.I.A. Director."

It was further resolved that monies will be contributed by the Societies Japan, Australia, New Zealand and the Philippines in proportion to their resources, such monies to be applied to purposes approved by the directorate.

"The meeting resolved that the Secretariat formulate draft rules to be circulated amongst Directors, and that subsequent opinions will be collated by the Secretariat and re-circulated to the Directors with a view to the adoption of the rules."

"It was resolved that Directors and Secretariat plan future Directors' meetings."

"The meeting placed on record its gratitude for the I.A.R.U. to hold the next Plenary meeting in Tokyo 1971."

(b) Subsequent Action: Letters and expressions of thanks for the action of the Institute in calling the Congress were received from overseas countries. The delegates from Japan made a presentation to the Federal President of a Yaesu Musem FT-DX-400 transceiver which was accepted with great hospitality. The delegates placed in the Institute's station VK3WIA. All participants in the Congress and Convention expressed their appreciation of the excellent facilities and hospitality provided by the Institute. Federal President thanked the N.S.W. Division for organising the facilities and those who were very appropriate to the occasion.

Following the Region III. Congress, Federal Executive had a face to face meeting with the Congress that amounted to little more than a broad expression of general policy. To a lesser extent, the motions passed by the Federal Council dealing with these matters could be categorised in a like manner.

It was, at least, clear that the W.I.A. was to appoint a "Secretariat" in "consultation" with the W.I.A. Director. Of immediate concern to us was the fact that the participating Societies had undertaken to provide funds for new organisation. These monies were to be remitted to the W.I.A. as providing the Secretariat.

The Executive took advice on the matter generally and were told, firstly, that no "Club" or similar organisation could exist apart from its "rules" or other constitution, and the W.I.A. could not create a new organisation, but not "create" any organisation. Secondly, if monies were collected on behalf of a non-existent organisation, these monies were in accordance with the general tenor of the Congress statement. This would be the right and personal risk of those officers of the W.I.A. who authorised the payment.

It was also pointed out that if money was merely collected and accumulated, difficulties could arise as to what to do with those funds if, in fact, the organisation did not come into existence.

In the context of our position in South East Asia, it seemed that we could not afford to have a Federal Council meeting in Australia, and that it was vital to ensure that the success of the Sydney Congress was built upon, and we also felt that a vigorous approach was required to the Region III. organisation into an actual working body.

At the outset, we ourselves were somewhat unsure of the matter, but the Region III. Council, the best way to deal with the matter was simply to go ahead and carry out what we believed to be the intention of the Congress and the Federal Council.

At the outset, the Executive appointed myself as the W.I.A. Director, believing that this was the logical extension of my position as Federal President at least in the somewhat difficult initial stages.

The other members of the Secretariat were Peter Widdows (Secretary-General), Michael Owen, David Rankin and David Wardlaw.

I suppose that as the Region III. organisation was not in formal existence, we were required to involve myself as being appointed to deal with the matter, but we felt it important to recognise the decisions of the Congress and the Federal Council. The Secretariat were able to preserve faith with the overseas Societies involved.

We then settled down to the long and tedious task of drafting an interim constitution. Our view that a constitution was essential was rapidly re-inforced by the refusal of the Nippon Bank to permit J.A.I. to fulfil its duty of Japan without the production of an appropriate constitution.

Our first attempt at an interim constitution failed to obtain unanimous support. (A copy of this first constitution and the covering explanatory letter was annexed to the copies of the report as submitted to Federal Council.) As a result of protracted correspondence, a series of amendments were formulated based on the views of the Region III. Council, the quarters and the other member Societies involved. (These amendments were set out in the interim constitution as submitted to Federal Council.) We believed that an interim constitution incorporating these amendments would be acceptable to all the Societies concerned. We therefore decided to submit the interim constitution incorporating these amendments. (A copy of this re-printed constitution, and a covering letter, was submitted to Federal Council for approval. If Federal Council does so approve, I have every hope that within six weeks we shall have an interim constitution in operation.) We will endeavour to get the Region III. organisation to commence real operation.

There are two comments that I should make. I stress that the constitution we are presently discussing is only an interim measure to enable the Region III. organisation to come into existence. The adoption of a final constitution will be the primary task of the next Penary. The adoption of the interim constitution has revealed widely diverging views and we must not under-rate the difficulties of resolving these differences.

The adoption of the interim constitution has involved us with much correspondence, and, as I think, brought us closer together, both with the other Societies in the Region and with I.A.R.U. Headquarters.

I have not dealt with the details of the proposals contained in the interim constitution. These are adequately set out in the material annexed to this report. This material also illustrates the vast amount of work that this task has involved.

Our aim has been to produce flexible rules but with sufficient detail on procedural matters to enable us to establish, if it ever becomes necessary, the necessary validity of what we have done. In considering these rules, I urge you to remember that we were bound to follow the precedent set out in Region III. Congress, and at the same time we had to construct rules that could adequately apply to the wide range of circumstances and widely different legal and social backgrounds.

As a result of our experience over the past year, I believe that I can offer some views for your consideration. I am strongly of the opinion that the Region III. Association (as it is to be called) represents the area of the greatest potential achievement in the past year. I consider that the integration of this activity with the Federal Executive's other activities is the greatest achievement consistent with the function of the Executive.

Our main immediate aim as a member of the Region III. organisation should be two-fold. Firstly, to ensure that any final constitution adopted by the organisation is workable and conforms with the aims of the W.I.A. and the aims of the W.I.A. Secondly, to make preparations for the next Regional Conference, using the Region III. organisation, to advance the interests of all Amateur Societies in the preservation of Amateur frequencies.

I believe that the Region III. organisation will remain one of the most important aspects of the W.I.A. activity in the next few years. The decisions of the Federal Council at this Convention as to how we are to achieve our aims in this matter will be, in my opinion, vital.

(c) Further Determinations: Executive has submitted the following motions to Federal Council for instructions on various aspects of this matter in relation to the Region III. organisation.

1969/4.1: "The Federal Council ratify the action taken by the Federal Executive to date since the last Federal Convention in relation to the I.A.R.U. Region III. organisation."

1969/4.2: "The W.I.A. approves the I.A.R.U. interim constitution."

1969/4.3: "The Federal Council determine a policy in relation to the appointment of W.I.A. Region III. Council members."

1969/4.4: "The Federal Council approve in principle F.E. officers also holding positions on the I.A.R.U. Region III. organisation Secretariat whilst Australia is providing the same."

1969/4.5: "Federal Council direct what is to be done with any surplus collected pursuant to motion 4.1.1 of 1968 for the I.A.R.U. Region III. organisation."

Section V.—P.M.G. AND REGULATIONS

Only one motion in this section was passed at 1968 Convention:

1968/5.2: "That Divisions undertake to advise members of the existence of a gentleman's agreement in relation to operating modes of c.w. and phone."

This was a motion arising from one to "re-constitute the P.M.G.'s Department to regulate the amateur use of the telephone and c.w. The motion as presented was lost, and the above motion arising (5.2.1) was carried instead. No action was required of Executive by this motion.

Several matters, however, were taken by Executive to the Department, as it is Executive's policy to appoint a P.M.G. to the Office on any matter which it feels may result in the granting of additional facilities to the amateur service. It is the duty of the Federal Council or whether brought forward by one Division. So this appears an appropriate place for me to report to you generally on representations undertaken with the Department by the Institute.

Firstly, may I say that the Institute still enjoys excellent relations with the Post Office. I am sure that the frequency allocations of Australia's Amateur Society, which is showing that it is viable, energetic, progressive, and, above all, united. If I may take this point a little further, of am very concerned that we may at times forget the ultimate objective of the "Institute" (defined as the Federal Executive, the member Societies, Divisions, together—that is, to represent the Amateur Service, and to ensure that operating facilities and frequency allocations are as liberal as possible to ensure the continued interest in our hobby, and therefore our survival. I feel there is a danger that we may forget the significance of those objectives of greater significance than this ultimate objective. I personally consider it is the duty of the Federal Executive to make every effort to preserve the W.I.A. as a viable society able to effectively represent the Australian Amateur Service—especially to the Australian Post Office.

Shortly there may be a necessity to join in preliminary discussions pertaining to the forthcoming I.T.U. space frequency conference. We must present a strong, united voice at such discussions. My concern is that we may place too much emphasis on those matters of immediate effect of some proposed action on the preservation of a "whole" Institute. Also I am concerned that the threat of a "partial" action may cause some of our objectives, may jeopardise the unity and strength of the voice of the Amateur Service.

Following our successful Convention/Congress last December, the Assistant-General, the Hon. A. S. Hulme, replied to my letter of thanks and said:

"I am pleased to note your appreciation of Post Office participation in the meetings and the successful outcome of the discussions concerning the forthcoming frequency conference concerning the establishment of a Union of Region III. Amateur Societies. I wish you and the members of your Institute every success in achieving your aims and objectives in the Amateur Service."

May I ask you to ponder on the aims and objectives of the Institute, and the aims and objectives of the W.I.A. officers. There should be no cause for things to be placed in such a poor perspective that the ultimate objectives are lost sight of!

V.M.F. REPEATERS/TRANSLATORS

During 1968, the Tasmanian Division provided a most interesting case for an unattended repeater system in their State. Executive had previously been concerned with the question of repeaters in relation to experiments, and with repeaters in relation to W.I.C.E.N. activities. Some excellent material had been received from the Tasmanian Division on request from A.R.R.L. and other overseas Societies, and cases in relation to beacon transmitters were familiar to Executive.

Executive discussed the whole matter of these systems with the P.M.G.'s Controller Radio Bands, and the results of negotiations were published to Federal Council and members generally.

Agreement has been reached with the Department in relation to repeaters/translators.

(i) The Department will approve the use of repeaters/translators in v.h.f. Amateur bands either on an experimental basis or on a permanent basis after installation.

(ii) Such repeater or translator may either re-transmit within the same band or to another band, but the use of the equipment will not be operated on frequencies below 144 Mc. though consideration may be given to the use of the same in the latter case.

(iii) Any application (to be made to the Superintendent Radio in the State concerned) for the installation of such a system with the Department will have regard to the following points:

(1) The number of translators permitted will be restricted to avoid undue interference in the band.

(2) The Department will require to be satisfied that the design and construction of the particular equipment in respect of which permission is sought is of a high standard of technical standard though reasonable allowance will be made for experimental devices. Additional technical points should be noted:

(a) The equipment should include arrangements for the operation of a "time-out" or any component will not cause the transmitter to lock on.

(b) The equipment should be adequately and regularly maintained. A record should be kept of all essential meter readings obtained during each maintenance visit, the repairs, adjustments, and the date of the next visit, the purpose of operation (i.e. the times of

switching on and switching off of the translator.

(c) Any form of modulation appropriate to the band in use may be employed. Where systems are designed to apply modulation, it will be provided to avoid modulation in excess of allowable limits as a function of received signal strength.

(d) No transmission shall take place in the absence of a received carrier or if so desired, voice or other modulation intended to convey intelligence.

(iv) The Department will have to be satisfied that a permanent installation is desired by a reasonable number of Amateurs in the area concerned.

(v) Net frequencies or other normally frequented band areas shall be avoided for both input and output channels of the repeater/translator, except where there is general agreement among Amateurs regarding such usage.

(vi) The Department will have to be satisfied that the equipment is safe for the authorised operation and can be quickly turned off in case of malfunction.

(vii) The site chosen must be acceptable to the Department. Transmitters and receive frequencies shall be as approved by the Department. As the Amateur Service is a secondary service, and a particular repeater/translator may be necessary in regard to the use of specific channels in these bands.

(viii) Permission to use such equipment will be granted to the club, however, similar to the licensing of a radio club—namely, one individual Amateur will be nominated as being responsible for the operation of the equipment.

(ix) To avoid the need for repeaters/transmitters, the equipment for identification purposes, station identification through them should include in their calling procedure an indication that they are operating through a particular repeater/translator.

"It is anticipated that all State Superintendents Radio will be aware of these arrangements presently. As the implementation of these arrangements may involve some difficulties that have been overlooked, some delays could occur.

"The Department suggests that, wherever appropriate, the local W.I.A. organisation should co-ordinate applications. It is suggested that persons seeking the use of these facilities should make their applications through the appropriate officer in their State, to ensure the fullest possible mutual co-operation."

General: Once again the Institute was treated with great consideration by Mr. Carroll who we feel our relations with Mr. Carroll could be more cordial. As is obvious, numerous difficulties surround the problem of v.h.f. repeaters/transmitters. We feel the solution set out above is eminently reasonable.

Following the release of this information to members of Amateur Radio, a desire arose for a meeting to co-ordinate this new facility. A meeting was arranged, and held in Wodonga. Members from VK2, 3, 5, and 1 attended, and Divisions requested Executive's participation.

Executive members attended, acting as chairmen and secretary. The meeting published detailed minutes and because the meeting had an "informal" status, Executive later circulated the minutes, on an agreement made at the Wodonga meeting:

"(A) That the following policy be adopted in relation to repeaters/transmitters in Amateur bands:

(i) A service translator is a translator designed to be used by current mobile equipment using channels A, B and C and with the intention of extending the range of similar operation;

(ii) An experimental translator is a translator designed to be used by mobile equipment by specially designed equipment and not intended to provide a use for normal operation.

2. The primary frequencies for service translators shall be 146.4 Mc. input and 145.9 Mc. output, and the secondary channel shall be 146.7 Mc. input and 146.2 Mc. output with 146.2 Mc. input and 145.7 Mc. output and 146.3 Mc. input and 145.8 Mc. output being reserved for future expansion should service translator facilities be subject to prior national agreement.

3. The frequencies for experimental translators shall be 146.1 Mc. input and 145.6 Mc. output and also 420.739 Mc. input and 431.50 Mc. output.

4. Each translator must be designed for a deviation of plus or minus 15 Kc.

"(B) That the following policy be adopted in relation to net frequencies:—

1. That the primary national simplex 2 metre f.m. frequency shall be 146.00 Mc.

2. That the primary simplex 5 metre f.m. frequency shall be 32.25 Mc., but

the 32.65 Mc. and 33.950 Mc. frequencies may be used as alternative State channels.

3. That the VK2 Division shall act as a Secretariat for the co-ordination of net frequencies and the co-ordination of net frequencies."

Voting on these motions has been in the affirmative by all Divisions. One point which was discussed with Executive by the VK1 Division was in relation to the status of a Secretariat. Executive's view was that any Institute activity involving co-ordination throughout Australia, irrespective of where the co-ordinating centre was located, was in Australia, the activity should be under the control of a Federal Co-ordinator. This officer would be responsible for the Co-ordination through Executive's Federal Activities Officer.

Executive feels that this follows established procedure—the matter has been raised by motion for the 1969 Convention.

APEX, JAYCEES AND OTHERS

"ON THE AIR"

At the 1968 Federal Convention, the following motion was introduced as general business: 1968/GB3: "That the Wireless Institute of Australia co-operate as far as possible with the Apex Clubs of Australia in their suggestion to the Australian Radio Club, contact with Apex Clubs in South-East Asia."

Executive was also independently approached by a representative of Jaycees for a similar request. This was discussed with the Department, whose attitude was made clear and firm.

It appears that in the past the Australian Radio Cross Society and various other organisations have made approaches, both at a Departmental and at a Ministerial level for permission to use amateur frequencies for similar purposes. The Department is totally opposed to such activities on Amateur bands. It feels that if the Department is to be justified on the basis that one of the objects of that activity is to interest young people in Amateur Radio as a hobby, and the provisions of the constitution of the Department are to the total object. In the case of other organisations, the express object of the exercise is to promote the communications facility. The Department feels that if it makes an exception in the case of one of these no doubt worthy organisations, it will find itself acutely embarrassed in the case of others. It therefore seems probable that any applications by Jaycees or Apex will not be successful.

OTHER MATTERS RAISED WITH P.M.G.'S DEPARTMENT

Several matters affecting particular Divisions were attended to by Executive during the year—including transmitters, hunts and field operation in Queensland, and matters of call sign allocation. Divisions have been informed of results of Executive's representations.

I.T.U. CONFERENCE FOR SPACE TELECOMMUNICATIONS

This is scheduled to be held at Geneva in late 1970 or early 1971. Executive has written to the Postmaster-General, requesting that an Australian co-ordinating committee be formed similar to the committee prior to previous I.T.U. Conferences involving frequency assignments, our representative would be I.T.U. Liaison Officer, VK3VX.

In writing to the Postmaster-General, Executive stated that, with the Amateur Service holding various assignments within the v.h.f.-s.h.f. range, it is essential that our I.T.U. representative be given the opportunity for a hearing.

The Postmaster-General has replied to the effect that the Post Office will make all preparations required for this Conference. In so doing, it will co-ordinate proposals originating from sources within Australia, and co-opt for discussion as required representatives of other services likely to be affected by such proposals and those of other countries which are to be accepted. Consideration of the I.T.U. representative VK3VX will be supplied with a copy of proposals which may affect the Amateur Service when they are available. Executive has submitted to A.R.U. Headquarters details of v.h.f.-s.h.f. activity in Australia, as requested.

Fatu Deterioration: Quite a large number of motions in this section is before Federal Council for its discussion. Undoubtedly Executive will receive a large number of motions on some or all of these matters, or may be requested to represent Amateurs or Divisions from time to time throughout the forthcoming year. Any such motions will continue to comply with Institute policy item P.02 of 1951:

"That the facilities granted by the Postmaster-General are not refused by the W.I.A."

Section VII.—CONTESTS AND AWARDS

These activities are administered by Executive through Federal Activities Officer on behalf of the Council. Contests and awards from Convention are acted upon by the co-ordinator appointed by Executive, and so are usually the subject of report annually to Federal Council. Therefore, I will not report on contests or awards.

However, I wish to say a sincere thank you to those who so ably look after our contests and awards. The amount of checking and recording are very much appreciated.

Section VII.—GENERAL MATTERS

Motion 1968/6.6: "That the Wireless Institute of Australia in a form appropriate to Amateur Radio publicise the anniversary of the arrival of Captain James Cook in Australia 1770-1970."

Executive has some suggestions as to the implementation of this motion, but as a formal motion requesting a report on progress made is before Convention, the matter will be deferred until the Convention.

1970 also co-incides with the 60th anniversary of the Institute, consideration of which is a matter before 1969 Convention or discussion.

Perhaps both can be suitably commemorated at the same time? Executive will await Federal Council instructions on these and other commemorative matters.

Motion 1968/GB1: "That the appropriate authority be approached for approval to mint a commemorative medal or coin in honour of the first Australian Amateur satellite—the Australia I.—and that the W.I.A.'s sponsorship of Radio Australia be discontinued."

Past Federal President investigated the matter of commemorative stamps and reported that a commemorative postage stamp depicting Amateur Radio could be possible if a strong application were made soon enough. He was delighted that any application would be enhanced if it could include a celebration date or something of that nature. The matter was discussed and outlined, and it was indicated that the authorities work in advance on a two-year programme, as in Hong Kong, where is little likelihood of an launch of Australian Amateur satellite in the near future, according to reports received by Executive, we feel that no time should be wasted in this matter. However, Executive now is in a position to advise Federal Council on future commemorative stamps.

Motion 1968/GB3: "That because of the overstatement of expenses of the Federal Convention held in Brisbane in 1968, in future stationery, postage and other expenses relating to Federal Conventions, the detail of expenses be limited to costs relating directly to the Conventions and incurred only on behalf of Federal Council and Executive. Expenses not include expenses incurred by Divisional observers and others which are directly refunded by Divisions or others."

In accord with instructions contained in this motion, Executive provided Federal Treasurer and Institute Auditor with a detailed breakdown of the expenses and expenses relating to Federal Conventions. The detail of expenses be limited to costs relating directly to the Conventions and incurred only on behalf of Federal Council and Executive. Expenses not include expenses incurred by Divisional observers and others which are directly refunded by Divisions or others.

In accord with instructions contained in this motion, Executive provided Federal Treasurer and Institute Auditor with a detailed breakdown of the expenses and expenses relating to Federal Conventions. The detail of expenses be limited to costs relating directly to the Conventions and incurred only on behalf of Federal Council and Executive. Expenses not include expenses incurred by Divisional observers and others which are directly refunded by Divisions or others.

Miscellaneous Motions: 1968/7.1: "That the term Hertz and its associated terminology be used in Institute publications, at the discretion of the Publications Committee."

This matter was referred to the Publications Committee, who recommended that it appear not to be using the hertzian terminology. No action is required of Executive.

1968/GB4: "That Federal Executive report on the progress of the support group for the publication of the brochure 'How Can I Become a Radio Amateur', and endeavour to arrange for early delivery to Divisions."

At the following meeting, Past Federal President tabled an up-dated draft of this booklet. On examination by Executive, there were a number of additional suggestions. The delivery date to Divisions is still indeterminate.

1968/GB5: "That Federal Council recommends Executive to request the Federal Co-ordinating Jim Webster, VK2ZCW, as Federal Co-ordinating

Amateur Radio, May, 1969

Book Review

WORKING WITH OSCILLOSCOPE

By C. W. Saunders

This rather large book of 104 pages measuring 11 x 8 1/2 in., devotes more than half the available space to diagrams and circuits. It is this reviewer's opinion that the drawings are unnecessarily large and it is difficult to accept the somewhat unconventional style, although it must be admitted it is very distinct.

The first 32 pages are devoted to what are called lessons. These lessons outline the theory and operation of oscilloscopes, oscillographic patterns, time base oscillators, vacuum tube time base generators and vertical deflection amplifiers. The remainder of the book comprises 25 projects, enabling the reader to apply the oscilloscope to practical experiments using the oscilloscope as a test instrument in a large variety of applications. The text is liberally supplied with illustrations of the types of trace to be expected under various conditions.

TAB Book No. 472. Price \$US4.95.

THE TYPE 111D IONOSONDE

By L. J. McGarry and S. M. Campbell

It may be recalled that the purpose of this series is to make available information about aspects of the work of the Ionospheric Prediction Service Division, Bureau of Meteorology, which may be of interest to those who do not normally be published in any scientific or technical journals.

The Australian Ionospheric Prediction Service uses vertical incidence ionospheric sounders to obtain data for prediction and research purposes. One such sounder, the Type 111D ionosonde, was designed and built by the Prediction Service. This report gives a technical description of the methods used to sound the ionosphere and record the results on 35 mm. film. The report is illustrated with block diagrams and graphs.

Our copy from Ionospheric Prediction Service Division, Commonwealth Centre, Chifley Square, Sydney.

SEMICONDUCTORS: FROM A TO Z

By Phillip Dahlen

This book proved to be an extremely interesting and informative publication. The 26 chapters, spread over 272 pages with over 300 illustrations, give a wealth of information on the range of transistors and semiconductors in use today—from basic diodes and transistors to FETs, MOS-FETs, tunnel diodes, integrated circuits, varicaps, photo FETs, light sensitive and light-emissive devices, unijunction transistors, field-effect diodes, SCR and zener diodes, etc. It explains how these various devices work and how they are used, with complete descriptions of all the common and unique circuits used in modern semiconductor technology.

The content begins with a review of how basic semiconductor work, including types and function, how a transistor conveys a signal, biasing techniques, effects of temperature, factors limiting frequency response, etc. Subsequent chapters delve into the area of field-effect transistors by explaining the differences between FETs and bipolar transistors, junction FET applications, frequency response, temperature effects and depletion and enhancement type MOS-FETs.

Considerable attention is given to integrated circuit applications. The use of varicaps is also covered, as well as unijunction transistors, field-effect diodes, zener diodes, diacs, and triacs, etc.

TAB Book No. 493. The price quoted is \$US7.95 hardbound or \$US4.95 paperback. We are given to understand that TAB books are the result from Robertson & Mullins in Melbourne.

SILENT KEY

It is with deep regret that we record the passing of the following Amateur:

VK3AOM—George W. Baty.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

REMEMBRANCE DAY CONTEST

Editor "A.R." Dear Sir,

Now that the results of the 1967 Remembrance Day Contest have been published, also the results of the Call Book, the writer has conducted a detailed investigation into the R.D. Contest rules to try and find a solution to make the contest a better one for all Amateurs, yet keeping to the expressed intention of the contest.

First of all it comes as a shock to find that the R.D. Contest, in its present form, is not a very democratic contest because approximately 200 licensed Amateurs cannot take part fully in the contest if they wish to do so.

The writer has very carefully examined the 1967 R.D. Contest rules published in "Amateur Radio", July 1968, the Editorial by VK3QV and the article by VK3JTX in the August 1968 issue.

The rules commence, "A perpetual trophy is awarded annually for competition between Divisions . . .". Further the rules state "VK1 scores will not be included with VK2, nor VK3 with VK3," but in the Receiving Section: "VK1/VK2 and VK3/VK3 are considered to be the same area for scoring purposes."

The Call Book, page 56, shows that there are only six Divisions—being New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania.

Now for the purpose of Commonwealth administration, Australia and its Territories are divided into 18 call-sign areas, and to make matters worse, the call-sign areas of the call sign carries a different numeral to other call signs in the same political area, i.e. areas under the same State Government.

For instance, Lord Howe Island carries the prefix VK2, but the rules state N.S.W. Macquarie Island carries the prefix VK0, although it comes under Tasmanian State Jurisdiction. Those living in Macquarie Island are entitled to vote in Tasmanian municipal elections, being considered Taswegians.)

I am not sufficiently familiar with the Internal administration of the W.I.A. to know if VK1 is part of the N.S.W. Division, and so on, but it is obvious from the rules that transmitting Amateurs in VK1, VK2, VK3 and VK0 (except where they live in Macquarie Island) cannot compete fully in the R.D. Contest.

My solution to this problem, therefore, is to create another Division to be known as the Territories Division, to include the registered or any Australian Commonwealth Territory would be included. The Call Book shows that there are about 100 such Amateurs.

It might be thought that administration of such a Division could be difficult, but the I.A.R.U. operates on a world-wide basis and have no doubt that a really active Divisional Committee could be established with considerable. Space does not permit going into details.

The second portion of the solution to the R.D. Contest problem is to include the registered W.I.A. s.w.l. members in his or her own Division's logs. (VK1, VK2, VK3 and VK0) there applicable in the proposed Territories Division.

Lastly, it is necessary to revise the formula and I propose the following:

Average of receiving logs plus average of top 6 receiving logs plus (Divisional logs entered divided by Divisional licences, multiplied by total points from all entrants).

I believe that these suggested changes would allow all transmitting and s.w.l. Amateurs to participate to the fullest extent in the contest and make it more equitable between Divisions. It will be noticed that in the formula the word State has been replaced with the word Division, since the contest is not between States but between Divisions. This proposal means that each transmitting Amateur and each W.I.A. registered s.w.l. has his individual score available to all, whereas at present the scores of VK1 and VK2 transmitting Amateurs are excluded by the rules, whilst VK3, VK3 and VK0 apparently cannot be included in present formulae as they are not Divisions as required in the first part of the rules. No doubt the poor response from VK1, VK2, VK3 and VK0 is due to this, mainly to this factor as this exclusion does not contribute to great enthusiasm for the R.D. Contest in these call areas.

I firmly believe that this proposal is the most democratic so far proposed although it

cannot overcome the apathy in the R.D. Contest which appears to exist in some Divisions to a greater extent than in others.

—C. A. Cullinan, VK3AXU.

S.W.L. PARTICIPATION IN VK CONTEST

Editor "A.R." Dear Sir,

After reading Mr. Treblecock's letter in the July 1968 "A.R.", I decided then and there that I would participate in the VK2/VK3 DX Contest despite the fact that at this time I had had my Lafayette HA230 only four months, and my countries heard tally was about 23.

I participated, listened for a total of 12 hours and heard 100 stations for 4575 points, and sent in my certificate. I was surprised and pleased to receive a certificate. However, the discovery that only ten VK listeners sent in an entry bitterly disappointed me.

Overseas listeners sent in entries with scores like 48, 24, 12 (UP2000, UC2001 and HA2103 respectively). Much as I would hate to kill the ZL Contest Manager with work, I think it would help to help the contest if even low-scoring listeners entered.

I may be forty years younger than Eric Treblecock, but I wholeheartedly sympathise with his feelings as expressed in his letter.

—Colin Kilduff, WIA-12342.

DEFINITE SPOT NUMBERS

FOR 1968

By M. Waldmeier, Eidgenössische Sternwarte, Zurich, Switzerland.

D. Ja. Fe. Mr. Ap. My. Jn. Jl. Ag. Sp. Oc. No. De.

1	119	208	106	122	126	139	55	98	75	89	104
2	123	211	110	108	144	134	37	91	82	73	78
3	128	199	82	96	143	121	30	92	119	106	71
4	137	170	86	96	136	114	26	94	118	116	81
5	152	137	77	89	127	115	28	94	111	118	87
6	150	114	67	85	142	129	41	95	96	126	82
7	164	98	58	79	135	136	54	100	90	135	82
8	182	97	67	82	139	119	89	113	106	112	89
9	200	102	77	82	132	105	91	98	128	87	105
10	198	82	74	104	117	99	85	111	111	111	81
11	1154	89	85	93	106	87	124	104	105	100	101
12	144	76	87	83	105	152	116	150	99	94	89
13	139	67	89	60	91	108	147	142	103	75	94
14	107	69	96	90	114	138	165	113	78	85	81
15	94	87	59	110	105	107	123	172	88	90	84
16	78	85	40	114	103	103	129	170	84	88	87
17	68	94	59	91	114	113	117	160	81	82	77
18	60	78	59	63	136	121	96	148	85	108	77
19	58	65	53	133	107	102	138	188	112	80	81
20	55	72	60	140	140	103	93	122	84	114	92
21	53	79	70	64	142	108	93	138	90	122	84
22	89	82	91	68	143	94	85	143	99	134	81
23	75	93	113	50	149	101	93	126	118	136	76
24	82	119	132	48	165	113	101	108	149	139	67
25	90	161	143	64	146	111	124	86	187	138	80
26	87	150	141	50	121	107	120	77	184	133	89
27	88	146	145	57	138	108	127	67	136	178	87
28	140	124	138	62	123	111	118	49	149	133	73
29	120	127	127	11	135	94	129	64	137	114	139
30	185	154	126	96	118	115	68	91	112	83	89
31	209	134	136	83	63	99	99	117			

Mean: Jan. 121.6, Feb. 111.9, Mar. 92.2, Apr. 81.2, May 127.2, June 110.3, July 96.1, Aug. 109.3, Sep. 117.2, Oct. 167.7, Nov. 86.0, Dec. 109.8. Yearly Mean equals 105.9.

FINAL SMOOTHED SPOT NUMBERS

July 1967	94.2
August 1967	95.4
September 1967	95.3
October 1967	95.0
November 1967	94.6
December 1967	100.6
January 1968	102.6
February 1968	102.5
March 1968	102.5
April 1968	107.2
May 1968	107.6
June 1968	106.6

Mean equals 100.8.

—Commonwealth of Australia Ionospheric Prediction Service.

NEW CALL SIGNS

NOVEMBER 1968

VK2FX—F. W. Nairn, 2/25 Delmar Pde., Gladstone, 211.
VK2AGV—G. M. Dowse, 18 Davidson Ave., Woonona, 2517.
VK2AVY—Penrith High School Radio Club, Station: Penrith High School; Postal: 89 Great Western M'way, Springwood, 2777.
VK2BJX—J. Chessell, 2 Esplan Court, The Esplanade, Ashfield, 2131.
VK2ZOT—D. K. W. Bradbury, "Karana," Derrivong, 2745.
VK2JAT—J. Bowmaker, 15 Akuna St., Keiraville, 2500.
VK2ZJ—J. F. Davis, R.A.A.P. Base, Richmond, 2753.
VK2ZKI—J. Thomas, 81 Hanbury St., Wentworthville South, 2145.
VK2ZKV—K. J. Cox, Stuart H'way, Forest Hill, via Waga Waga, 2650.
VK2ZLA—J. L. M. Andrews, 49 Lord St., Roseville, 2069.
VK2ZMA—J. Mansfield, 33 Bundarra Rd., Bellevue Hill, 2023.
VK2ZNN—T. N. Dunn, 6 Pat Hargraves Pl., Maroubra, 2025.
VK2ZPX—P. W. Walton, Station: 99 Harding St., Deniliquin; Postal: P.O. Box 267, Deniliquin, 2710.
VK2ZSS—J. Wilson, Unit 2, 76 Lauderdale Ave., Fairlight, 2040.
VK2ZMZ—B. K. Boardman, 108 Chelmsford Rd., North Ryde, 2070.
VK2ZBR—T. R. Russell, 1 Cedar Crt., Forest Hill, 3131.
VK2ZCT—B. S. Lakey, 32 Giles St., Mirboo North, 3271.
VK2ZEL—R. A. Hipwell, 57 Pier St., Dromana, 3936.
VK2ZJA—J. K. Echeberg, Lot 10, Bahama Crt., Vermont, 3133.
VK2ZOD—G. O. W. Niele, 14 Elaine Crt., Springvale, 3171.
VK2ZDB—M. Shaw, Myrneath, Wangaratta, 3732.
VK2ZEW—P. A. Stroude, Lot 38, Shelley Ave., North, 3153.
VK2ZOG—P. G. M. Bruer, Flat 11, 65 Tivoli Rd., South Yarra, 3041.
VK2ZOH—H. J. B. Piers, 215 Richmond St., South Blackburn, 3130.
VK2IAE—J. D. Elshoff, Station: 331 Rode Rd., Chermiside, 4033; Postal: 394 Rode Rd., Chermiside, 4033.
VK2IAD—A. J. Chappell, D'Aguiar, 4513.
VK2IHO—C. Churn, 1 Rolland St., North Ward, Townsville, 4810.
VK2IJS—L. Stehn, 210 Alma St., Rockhampton, 4700.
VK2IKC—G. J. Griffiths, 1 New St., Nerang, 4204.
VK2IMU—T. W. Marks, 22 Renta St., Aspley, 4034.
VK2INO—E. T. Norris, 210 Hume St., Toowoomba, 4360.
VK2IOB—Rockhampton District Boy Scouts Radio Club, Station: Seconee Park, Rockhampton, 4700; Postal: Fitzroy St., Rockhampton, 4700.
VK2IOQ—P. J. Murdoch, 29 Sixth Ave., Palm Beach, 4221.
VK2IOE—E. W. 4255, 35 Charles St., Gladstone, 4690.
VK2IKT—J. H. Campbell, 31 Kamarin St., Manly, 4179.
VK2IAP—J. F. Smith, M207, Borneo Barracks, Cabarlah, 4250.
VK2IZT—T. Connolly, 28 Birubi St., Coorab, 4250.
VK2IZS—G. T. Schott, Woondi Rd., Bell, 4408.
VK2IEI—W. E. Dixon, 18 Mosterton Rd., Elizabeth Park, 5113.
VK2IAE—W. E. Dixon, 18 Mosterton Rd., Elizabeth Park, 5113.
VK2ISU—H. J. Sutton, 10 Price Ave., Klemzig, 5087.
VK2ISCE—R. J. Steber, 238 Victoria Tce., Hawke, 5062.
VK2ISZ—L. R. Reseck, 8 North Pde., Kingswood, 5062.
VK2ISQ—C. J. McLachlan, 7 Austral Tce., Morphettville, 5043.
VK2ISL—P. Lawson, 1 Doreen St., Prospect, 5082.
VK2ISD—P. Legg, C/o Morris Hotel, Innaloo, 6018.
VK2ISZ—A. W. Pike, 6 Latham St., Alfred Park, 6101.
VK2ISJ—J. Thornett, 1196 Acanthus Rd., Riverton, 6155.
VK2ISF—J. S. Sison, Station: 4417 Bulbul St., Ludlow, Darwin, 5790; Postal: Box 2457, Darwin, 5794.
VK2IAZ—B. Gardiner, 2012 Young Cres., Alawa, Darwin, 5790.

VK2IPB—A. D'Arcy, 1950 Trower Rd., Alawa, Darwin, 5790.
VK2ZKA—P. H. Van der Velden, Flat 1, 2332 Austin Lane, Darwin, 5790.
VK2SDH—D. G. Hallam, Station: Cassia Cres., Section 11, C/o. O.T.C. Box 251, Lae, N.G.; Postal: C/o. O.T.C. Box 251, Lae, N.G.
VK2SLA—Lae Amateur Radio Club, Station: Bugundhi High School, Markham Rd., Lae, N.G.; Postal: Hon. Secretary, P.O. Box 799, Lae, N.G.

CANCELLATIONS

VK2IAUW—P. R. Crothwaite, Not renewed.
VK2IBGG—G. J. Griffiths, Now VK4KC.
VK2IBH—J. H. Thompson, Not renewed.
VK2IBMG—M. B. Browning, Not renewed.
VK2IBWR—W. R. Windone, Not renewed.
VK2ZGZ—C. Kloppenburg, Transferred Interstate.
VK3RJR—T. R. B. Russell, Now VK3BR/T.
VK3VO—R. J. Clark, Deceased.
VK3ACO—St. Ann's Science Club C.E.G.S., Sale, Ceased operation.
VK3ZQC—B. J. Lakey, Now VK3ACT/T.
VK3ZXS—P. A. Stroude, Now VK3ZEW.
VK3ZD—D. J. Adams, Now VK3P.
VK4BT—N. W. Atkinson, Not renewed.
VK4ZCA—A. J. Chappell, Now VK4DY.
VK4ZCI—L. H. Campbell, Now VK4TK.
VK4ZCZ—J. J. Hazell, Transferred New South Wales.
VK4ZCI—C. B. Dunn, Ceased operation.
VK4ZD—N. T. Dwyer, Not renewed.
VK4ZLS—A. L. Stehn, Now VK4IS.
VK5DI—W. T. Lucas, Not renewed.
VK5NKC—K. G. Ellis, Ceased operation.
VK5ZEA—J. C. Batty, Not renewed.
VK5ZET—E. R. Tuohy, Not renewed.
VK5ZEC—P. M. Van der Velden, Now VK5ZKA.
VK5JM—J. P. Meehan, Transferred to N.S.W.
VK5AL—A. Nickols, Left Antarctica.
VK5OL—P. J. James, Left Antarctica.
VK5JW—J. G. Kaarsberg, Left Antarctica.
VK5VK—V. J. Kitney, Left Antarctica.

DECEMBER 1968

VK1AD—M. B. Brown, Station: 5 Palmer St., Garran, 2500; Postal: P.O. Box 183, Manuka, 2601.
VK1LF—B. P. Piers, 2 Elder St., Braddon, 2601.
VK1ZJH—J. Hyne, Station: 12 Perkins Pl., Ararat, 3207; Postal: P.O. Box 1271, Canberra City, 2601.
VK2ADE—F. N. Leverrier, 21 Allambie Rd., Castle Hill, 2059.
VK2AGJ—C. P. Daw, "Woodlands," Wombat, 2595.
VK2BPA—Covers High School Radio Club, 6 Walker St., Covra, 2794.
VK2BEW—E. A. Woodbridge, 2 Dorman Cres., Lindfield, 2070.
VK2BR—J. Brunette, 51 Ilford Ave., Buttaba Heights, via Rathmines, 2283.
VK2BVR—V. A. Rochfort, 1 Hemingway Cres., Fairfield, 2165.
VK2ZDZ—D. J. Williamson, 16 Market St., Bankstown, 2209.
VK2ZFH—A. C. Connell, 11 Allandale St., Berfeld, 2222.
VK2ZSV—B. S. Stevenson, 21 Glendower Ave., Eastwood, 2122.
VK2ZJZ—J. P. Wait, 25 Strathlora St., Strathfield, 2135.
VK3AZ—J. D. Lundy, 90 Dainy Rd., Murrumbidgee, 3153.
VK3CW—C. A. Denison, Station: 44 Johnstone Rd., Oaklands Park, 5046; Postal: Dept. of Physics, University of Adelaide, Adelaide, 5000.
VK3DZ—M. J. Groth, 75 Charles St., Prospect, 5062.
VK3PA—P. A. Matthews, 11 Gurr St., Goodwood, 5034.
VK3Q—G. E. Southgate, 203 Wright Rd., Valley View, 5083.
VK3ZC—R. A. Cunningham, 59 Teusner Dr., Morphett Vale, 5182.
VK3FR—R. F. Frost, C/o. N.A.S.A. Space Research Station, 5182.
VK3GT—G. J. Bedwell, 43 Pandora Dr., City Beach, 6013.
VK6WX—W. G. Garton, 5 "Santa Barbara", Hastings St., Scarborough, 6019.
VK6ZG—C. P. Cairns, Station: Carnarvon; Postal: P.O. Box 98, Carnarvon, 6701.
VK7RR—B. J. Morgan, 110 Hampden Rd., Hobart, 7000.
VK7TK—Hobart Teachers' College Electronics Club, 2 Edward St., Hobart, 7000.
VK7ZC—C. A. Danth, 9A Philosopher St., Savage River, 7321.
VK8DA—Darwin Radio Club Incorporated, Station: 1 Kerin Pl., Rapid Creek, 5789; Postal: P.O. Box 1897, Darwin, 5794.
VK9KY—K. Yun-Hung Young, C/o. Ionospheric Prediction Service Station, R.O. Box 31, Coes (Keeling) Island, Indian Ocean.

CANCELLATIONS

VK2HI—A. H. Brodick, Transferred to N.T.
VK2JK—J. S. Vardy, Not renewed.
VK2Q—H. F. Newson, Not renewed.
VK2BFL—L. B. Fisher, Now VK1FL.
VK2BRF—R. C. Froberg, Not renewed.
VK2ZAF—J. L. Harrison, Transferred to V.A.
VK2ZQM—G. V. Comber, Not renewed.
VK2ZBS—S. A. Brunette, Now VK2BRU.
VK2ZC—H. J. Langden, Transferred to N.S.W.
VK2ZBH—M. R. Haskard, Ceased operation.
VK2ZDH—R. A. Jackson, Ceased operation.
VK2ZMG—M. Groth, Not renewed.
VK2ZMP—A. Matthews, Now VK5PA.
VK2GD—H. R. Geldard, Deceased.
VK2ZEF—R. F. Frost, Now VK5FR.



W.I.A. ANNUAL REPORT

(Continued from Page 24)

One feature of the year under review has been the stringent criticism the Executive has received from one Division. I do not believe that that criticism has on all occasions been unjustified, neither do I consider that we have received any generosity or understanding from that Division. The effect has been to divert our time and energy from the constructive activities to the, at times, seemingly interminable disputes. Another effect has been to magnify small matters to an importance they do not justify.

So, for the forthcoming year, we seek the consideration and understanding of all the Divisions. To expect the best from honorary members subject to the undue pressure of the past year is unrealistic. There must be occasions when there is a legitimate and justified difference of view between a Division and the Executive, as there must be between Division and Division.

To resolve these differences, to reach agreement, to advise Executive in the execution of these agreements is the purpose of the Federal Convention. Except in the most unusual case, these cannot be satisfactorily resolved by the unilateral exercise of non-constitutional power by one Division.

Likewise, it should be remembered that at times when information is sought, the Executive is often asked to undertake a task which has completed its task. To demand that the Executive justify what it has only half done is not to exercise restraint. In the forthcoming year, then, let us all try to avoid a repeat of the past year; let us all exercise some tolerance and understanding and also above all, remember that in most cases there is room for two quite legitimate but different views on the same subject, but proper procedures exist whereby one part of the Institute can attempt to convince the Institute as a whole of the worth of its views. So Executive seeks the personal support of each Federal Convention, who also believe that they should not engage in actions that are, whether justified or not, destructive of the Institute as a whole. We also hope that all parties to the Federal organization will express their personal, divisional, or other unique viewpoints in the interests of the Institute as a whole, and also allow the Institute to use its established procedures to determine for itself what is in the best interests of the "Institute". There is only one Institute—we are all parts of it. No one part of the W.I.A. is greater than the W.I.A.!

In summary, gentlemen, I believe that this Executive has generally acted vigorously and competently to carry out the wishes of the Institute over the past year. In spite of difficulties, much has been achieved. However, we do not feel that we have always been given a "fair go".

—JOHN B. BATTRICK, VK3OR, Federal President, W.I.A.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R." in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarendon St., Avondale Heights, Vic, 3004

Since the last issue went to print the VK6 two metre beacons have been heard on at least three occasions, but as yet no VK3 Amateur has been able to work the elusive VK6 on two metres, but it is reliably reported that VK6s have worked into Perth.
Other news is that Ray VK3ATN's two metre moonbounce record has been broken by a ZLI and a SM7; the VK3 V.H.f. Group has a new committee, and at the time of typing these notes, the W.I.A. Federal Councilors are fighting it out at Canberra.
Hope to have more news for you next month. T3, Cyril VK3ZCK.

BEACONS

Addenda to the March 1969 list supplied by Brian VK3TAT:

VK6VP/P—Albany, 144.500, VK6VP/P—Perth, 143.02 Mc.
VK3VF—Adelaide, 144.800 and 53.000 Mc.
ZE1JZA—Rhodesia, 144.615 format, 2-second key up, 35-second rest, 108 seconds of six call signs, and 280 seconds of key down.

Christchurch, New Zealand: Terry ZLIATU states that the Christchurch two metre beacon is almost ready to go on the air. The frequency is 145.000 Mc. and will be using a horizontally polarized antenna omnidirectional and fed with about 20 watts of r.f., keying will be f.s.k. of 800 cycles and the call sign of ZLIATU. (Reprinted from April Spectrum.)

VICTORIA

The March meeting of the V.h.f. Group coincided with the Group's annual general meeting and so much of the evening was devoted to the election of office-bearers for the forthcoming year. The results were as follows: Chairman, G.K.2005; Vice-Chairman, Neville VK3ZPN; Secretary, Noel VK3ZPQ; QSL Manager, Bill VK3ABP; Treasurer, Derek VK3ZVP; Publicity Officer, Peter VK3ZVO; Equipment Officers, Peter VK3ZAV and Cyril VK3ZCK.
A hearty welcome is extended to both Peter VK3ZVO and Derek VK3ZVP, who are new to the V.h.f. Group. A total of eight votes of thanks was extended to the retiring officers for the excellent work they have performed over the past two years.

Beacon Group. Latest news of the group is the planning of completely solid state equipment including the keyer. Construction is well under way and we hope to have them operating on the air well before next summer.

6 Metres.—Activity in the metropolitan area and outlying districts the only chance for a few hours peace on this band owing to the extended hours of operation of our Channel 6 is quite good with many new stations making contacts and the older ones just finding out if their gear still works. Brian VK3ZPU in Ballarat worked through to JA and QSL'ed JA1, JA7 and JA8. A total of eight QSO stations; also heard working them were VK4s and VK5s.

10 Metres.—Quite a number of newcomers are appearing on the band, while Ron VK3AKC

regularly works VK7WF and VK3ZKR. The only other reports of DX are that the VK3 2 mX beacons have been heard on many occasions.

432 Mc.—Activity here is diminishing now that the Ross Hull Contest is over, but regulars appear quite frequently and a number of stations are building gear for this band. Maybe 432 will become more active than 2 metres.
A.T.V.—Brian VK3ZPU has almost completed a 440 Mc. a.t.v. rig and will soon be checking out the path of Geoff VK3AUX's Mt. Dandenong ZLI and will be interested to hear from any Amateur interested in a.t.v. T3, Peter VK3ZVO.

Geelong.—Max VK3ZGY, of Geelong, reports that the 2 mX band was really open on Saturday, 8th March, as he managed to work Max VK7M2, Col VK7LZ, John VK7NZ and Den VK7MT with 100 W. on 2 mX. A Geelong, from his 16 ft. runabout whilst doing a little bit of fishing! Also from Geelong, there appears to be some strong signals on or about 147.85, the same signals can also be heard on 145.854 Mc.

DX RECORD, 2 METRES, 11,370 MILES

This was an earth-moon-earth QSO on 4th March, 1969, at 1758 GMT. John ZLIATU worked Kjell SM7BAE of Sweden. Gear used: 100 W. 1.6-16.1 Mc. p.p.s. 4/400 p.p.s. (two screens), zero beam class B linear and p.o. 350-656 watts. Rx: Diglet masthead pre-amp. 100 W. 1.6-16.1 Mc. p.p.s. 4/400 p.p.s. 108 element array made up of eight 6/6 solid spot yagis. SM7BAE—tx, 4CX250, 1500 watts (put, Rx) N4416 masthead pre-amp. Antenna, 159 element array made up of eight 6/6 solid spot yagis. (Reprinted from April Spectrum.) It is hoped that full details of this new record will be available later.



Rhodesian Beacon ZE1ZA Back on the Air

AFRICA TO AUSTRALIA POSSIBLE ON TWO METRES

Since January 1968 a South Australian Amateur, VK3TIN, has been attempting to analyse long range tropospheric propagation on two metres across the Great Australian Bight. It has been done by comparing the surface weather maps, together with the aerological soundings (temperature, humidity, wind, etc. the magnitude of temperature inversions) available from the Bureau of Meteorology, with the strength of the two metre beacon from Albany, Western Australia (VK3ZVP, 144.500 Mc.).

Albany is particularly well situated for the experiments and in 1968 and 1969, in Albany, Adelaide and in the southern part of Australia have been noting the signals from VK6VP/P and VK6VP/P on about two days per week. On 3rd January, 1969, conditions were the best they had been for 12 months and Mick VK5ZDR contacted Wally VK6WG on two metres, achieving the first contact between a station on two metres since it was first attempted in 1951 by Clem VK5GL and Bob VK6BO.

The advantages of making two metre contacts during the winter range and have been recently in conditions such as existed on 3rd Jan. '69 are that the openings can usually be predicted from the weather charts a day or so in advance (propagation via the back edge of cold fronts is not as easy to predict).

This procedure had been first noted by VK5ZDR in 1964 and has been recently revived by Brian VK3TIN as a prelude to taking advantage of the large "high" that exists most of the time in the Indian Ocean region. Conditions for the Indian Ocean region are made possible by the twice daily weather maps which cover most of the Southern Hemisphere. These maps are available at the Bureau of Meteorology in each capital city, together with the aerological soundings for places such as capital cities and Carnarvon.

Inspection of the Indian Ocean weather maps since 1st Jan. '68 has shown that tropospheric propagation should be good between Carnarvon and Tananarive (Madagascar) (formerly Madagascar) on about ten days in the period January through July and occasionally conditions will allow further south to enable v.h.f. tropospheric propagation between Perth and South Africa (especially in the vicinity of Rhodesia). Propagation as far to the east as South Australia should occasionally be possible.

The announcement in the December 1967 issue of Electronics Australia, of the establishment of a Meteorological Club, has been taken together with information about the excellent long range tropospheric propagation in Feb. '68

and the existence of the Southern Hemisphere weather maps being realised, resulted in VK3TIN commencing a programme of investigation to see whether the Indian Ocean could be spanned v.h.f./u.h.f.

This programme of investigation has resulted in communications with the Radio Society of Rhodesia, which revealed that the beacon had been active since June 1961 to February 1969. By request from Australia, ZE1JZA has been repaired and put back into operation at its former site, 70 miles from Salisbury, Rhodesia, and the two metre transmission has been beamed to Australia from 1st March, 1969, 24 hours a day. Continuous beacon operation has been promised up to September 1969, requested, after which time the beacon operation may be concluded if there are no positive results.

Amateur Radio operators situated within, say, 300 miles of the Indian Ocean, near Carnarvon and Perth are particularly requested to monitor the beacon which is identified in f.s.k. for 2½ minutes, followed by unmodulated carrier repeated every seven minutes. The frequency is 144.015 Mc. only (the 432 Mc. beacon is no longer on the air). The power output is 60 watts and the 16 element array beamed towards Australia has a gain of 15 db over a dipole. It is expected that when a large high pressure region on the Indian Ocean extends from Africa to the Australian mainland, that signals received with a two metre array should be available at a level of up to 20 microvolts in Western Australia and even in South Australia. (Reprinted from April Spectrum.)

Verification of tropospheric propagation over the Indian Ocean up to 1000 miles apart, will provide further evidence to permit research being undertaken in various parts of the world in v.h.f. microwave propagation and meteorological. Mr. Brian VK3TIN, VK3TIN, would welcome further enquiries, or African signal reports to 33 Ningana Ave., Kings Park, South Australia, 5001.

Note.—The extensive f.m. broadcasting network of stations in South Africa may prove to be additional most powerful beacons. These extend to 96 Kc. on Channel 1 on 87.49 Mc. to Channel 234 on 107.642 Mc. (Durban North).

Information about suitable v.h.f. transmissions preferably close to 144 Mc. from Malagasy Republic would be welcomed by VK3TIN.



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(1) Submission of QSL cards for the countries being claimed. These cards are returned to the owner of the award, signed as accurate by TWO other licensed Amateurs.
(2) Submission of photostat copies or clear photographs of QSL cards. Such photographs should clearly show the call sign of the station making the claim and also establish the fact that the contact was made using r.t.t.y. as a mode of communication. This type of claim is subject to audit and must be supported by TWO other licensed Amateurs.
(3) Claims may also be accepted based on a claimant's own logbook, provided it is endorsed by the British Amateur Radio Teleprinter Group. The claim for the QCA Certificate should be made at the same time as the contest log.

The cost of the certificate is \$US1 or 7/6 in International Reply Coupons.

For details of the award, contact G.D.W. B.A.R.T.G. Contests and Awards Manager, 33B Windmill Hill, Enfield, Middlesex, England.

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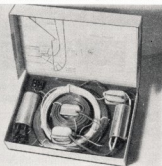
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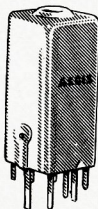


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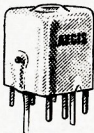


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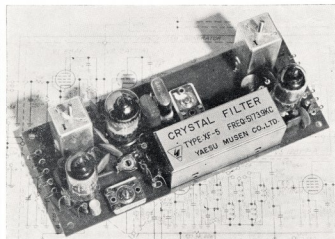
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Changes for Mobile Radiotelephone Services

Licensees of V.H.F. land and harbour mobile radiotelephone services, now operating in 30 kc/s channelling areas, are advised that if they have not already installed equipment which meets the Australian Post Office 30 kc/s channelling specification, they must do so before 30 June, 1969.

This requirement has been brought about by the growing demand for V.H.F. mobile radiotelephone services in city areas which is taxing the existing channels available. The change to 30 kc/s channelling will enable more radiotelephone services to be brought into operation as they are required.

However, some changes to existing equipment will be necessary and the following programme for conversion, which is designed to cause the least inconvenience to all concerned, has been adopted:—

As from 30 June, 1969, licensees of V.H.F. mobile radiotelephone services operating in 30 kc/s channelling areas within the frequency bands 70-85 Mc/s and 156-174 Mc/s* will be required to make necessary changes so that:—

- (i) All base station transmitter/receivers (both amplitude and angle modulated) employed in a base station installation shall be of a type complying with the relative Post Office specification and approved for 30 kc/s operation and shall be operated in accordance with the terms of that specification.
- (ii) All angle modulated mobile transmitters shall be adjusted to function with a maximum deviation of ± 5 kc/s.

*This excludes the International Maritime Mobile V.H.F. Radiotelephone and the existing Australian Post Office Subscriber Services.

Early conversion will assist manufacturers in meeting delivery dates for equipment.

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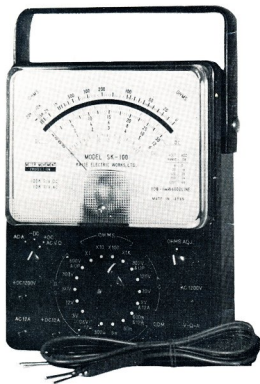
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